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THE PRINCIPLES AND PRACTICE OF

# GOOD INSTRUCTION

PART 2

FOR OFFICERS CONCERNED WITH THE  
ORGANIZATION OF TRAINING

*Prepared under the direction of  
The Chief of the Imperial General Staff.*

THE WAR OFFICE  
May 1947



## DEFINITIONS

The words listed here are frequently used throughout the pamphlet in a special sense. If you are not quite sure what they mean, read through these definitions.

### ASSIMILATION

The understanding and remembering of knowledge. Assimilating a lesson can be compared to digesting a meal. The food, or the subject matter of the lesson, does not do any good until it has been assimilated and has become part of the person.

### KNOWLEDGE

The understanding and remembering of facts. Knowledge concerns storage in the mind only. Applied knowledge is a technique.

### MOTIVATION

A man is motivated when he WANTS to do something. A motive is not quite the same as an incentive, for whereas a man is inspired and made enthusiastic by an incentive, his motive for wanting to do something may be a fear of punishment. Motivation covers ALL the reasons which underlie the way in which a person acts.

### RECEPTION

The actual process of receiving new learning. It may be received through the ear by hearing, through the eye by watching or through the body by imitating, or through any combination of the three. A man will only receive learning if he WANTS to do so.

### S

The quality of self-development, or the full expression of a man's personality. A well-developed personality will have :—

INITIATIVE  
IMAGINATION  
ADAPTABILITY  
ALERTNESS  
CHEERFULNESS  
MATURITY.

### A SKILL

A physical act, usually almost instinctive. When a movement of the body is not instinctive but needs constant thought, it is a technique.

### A TECHNIQUE

A way of thinking or behaving. An application of knowledge, or skill, or both.

### TRANSMISSION

The act of passing knowledge or skill from the instructor to the class. Transmission may be effected by talking or showing.

### W

The qualities which centre around a man's WILL-POWER, but this quality does not mean will-power alone, and should not be thought of as such. It includes :—

COURAGE  
TOUGHNESS  
PERSEVERANCE  
DISCIPLINE  
SENSE OF DUTY  
RESPONSIBILITY.

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May, 1947  
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THE WAR OFFICE  
May, 1947  
Prepared under the direction of  
The Chief of the Imperial General Staff

## INTRODUCTION

• This pamphlet is intended as a work of reference on the principles and practice of good instruction for the use of all officers who are concerned with the organization of training. It is designed in particular for Methods Officers and Chief Instructors.

•• It is assumed that any officer who reads this pamphlet will be thoroughly familiar with the contents of Part I, The Principles and Practice of Good Instruction for Officers and NCO instructors.

••• The scientific study of instruction entails the use of certain technical terms. These are fully defined on their first appearance, and to ensure that subsequent passages are understood, their meaning should be thoroughly grasped before reading on.

INSTRUCTION AND REINFORCEMENT  
INSTRUCTION, a definition and an example.  
REINFORCEMENT, a definition and an example.  
An example of inhibition and reinforcement in relation to a morning's training.



# SYNOPSIS

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**CHAPTER**

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Behind Instruction*

**INTRODUCTION**

**I**

A farmer with fifty years successful farming behind him would resent the suggestion that he could be taught anything by a course at an agricultural college. He would consider, and rightly, that he could learn nothing from statistics books and lectures that he had not learnt better in the hard school of experience. Yet, although the best farmer in the country, he might not be able to pass on to a young learner the fruits of his experience. Although he knew what to do in every conceivable agricultural situation, his knowledge might be implicit, relying on instinct and experience and never consciously formed into reasoned thoughts, and therefore beyond the possibility of explanation except in a jumble of disconnected hints. And so, before he can teach the young man, he must learn from the college how to reduce the art of farming to its basic terms, how to define its principles and explain their application. Similarly the scientific study of instruction will teach little that is new to the seasoned instructor. The application of the scientific facts he will have learnt from experience, which is the safer way. An elementary scientific understanding of the nature of learning and teaching will, however, give the inexperienced instructor a short-cut towards proficiency. He will find here information ready-on-the-peg that otherwise might not have been acquired without years of practice in instructing. And the seasoned instructor will recognize some of his massed store of experience in tabulated form, a form in which he can conveniently pass it on to those newer at the game than himself.



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## LEARNING CURVES

2

The nature of learning was discussed in general terms in Part I, Chapter 5 (Assimilation). A great aid to the more specialized study of learning is to plot its course on a graph, as in Figure 1.

## A TYPICAL LEARNING CURVE

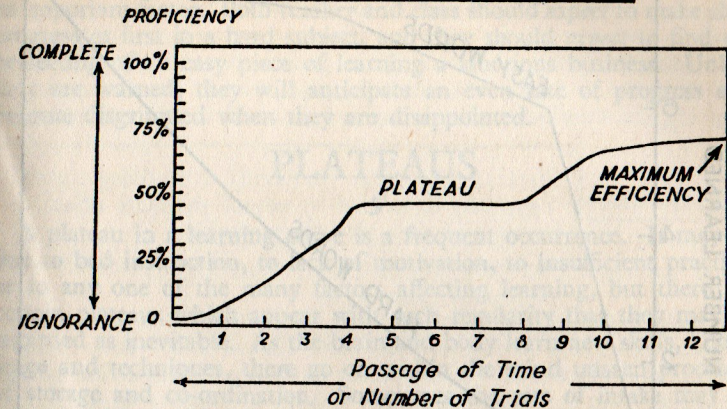


FIGURE 1

The line along the bottom indicates the amount of teaching; this may be measured by the number of periods of instruction, the number of practices (or trials), the time given to the learner for self-instruction, or by any other means of gauging numerically opportunities for learning. The line up the side indicates the learner's degree of proficiency; this may be measured by time, as in the Weapon Training TsOET, by the number of errors committed, as in certain MT inspection tests, or by the number of marks scored, as in the majority of examinations and tests. The learner's proficiency can then be plotted against the amount of teaching and the result will give an indication of the speed and success of his learning. This result is called a **LEARNING CURVE**.

When the curve rises steeply, learning is fast; when it flattens out, the pace of learning is slowing up. Any significant flattening of the curve between two steeper slopes is called a **PLATEAU**. When the learner reaches his maximum proficiency the curve will flatten out finally and become a horizontal line.

## EASY AND DIFFICULT SUBJECTS

3

Every man has his own standard of ability and his own speed of learning, but by taking an average over large samples of learners, certain general rules will emerge governing different types of learning. Thus we find that men learn a hard subject slowly at first and more quickly as they become proficient, whereas they learn an easy subject quickly at first but their rate of learning slows up as they near perfection. Figure 2 is an example of this rule:—



Assuming that the factors affecting learning remained constant, something happened inside that man's brain between the ninth and twelfth weeks in learning to send and the fifteenth and twenty-second weeks in learning to receive. During these periods his learning seemed to stop altogether. Inside his mind, however, he was slowly but surely resolving the deadlock and eventually he started to improve again.

## RULE TWO

Plateaus will occur frequently in learning curves. They may be caused by any of the facts affecting learning or they may be inevitable.

6

The main lesson to be drawn from this rule is that when an inevitable plateau occurs the instructor and class should know that there is nothing to worry about. If the officer in charge of instruction notices that a class is in the doldrums he can first try to improve all the factors affecting learning that are under his control. He can change the instructor, give the class a week-end pass or improve the lighting in the classroom. If, however, he notices that every class is doldrum-bound at that same particular stage in their training, then he should take different steps. As a sense of progress is a great motivating force, so a feeling of standing still destroys the will to learn. It must be explained both to class and instructor that the foundations are being laid for future achievement, that no visible results need be expected for some time, that apparent lack of progress is the normal, expected thing.

## INSIGHT

7

In Part 1, Chapter 5 (Assimilation), the different speeds of reaching understanding were explained. Sometimes the process is slow and laborious, at others it is reached by a flash of insight. Here is an example of the latter taken from the Zoo:—

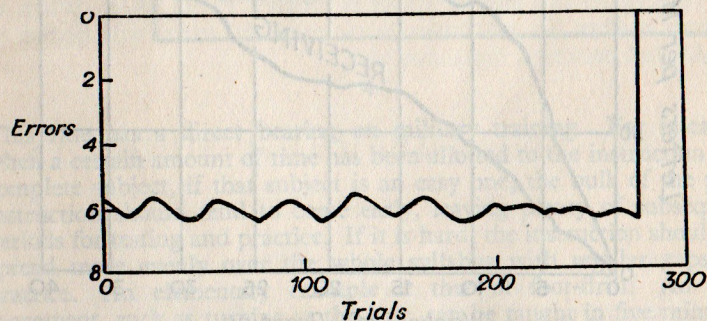


FIGURE 4

### LEARNING CURVE : INSIGHT

Learning curve for an ape who, to get food, had to choose the left-hand box from a row of boxes which varied from three boxes to five.

Each time that the ape was fed, his food was put in the left-hand box. Yet for over 290 meals he would rummage through the boxes without method until suddenly at the 291st meal he got the hang of the thing and never made another mistake. Why was that? It is hard to believe that the ape had learnt by working out any logical system of trial and error. We can safely assume that his sudden success was due to INSIGHT.

## RULE THREE

Sometimes the gap from total ignorance to complete understanding can be bridged by a single flash of insight.

8

Many military subjects have their knotty points which can be solved only by insight, and a great deal of time can be saved if the instructor understands the best method of reaching it. Too often he explains the problem in the way which seems the easiest to HIMSELF, and when confronted by a high percentage of blank faces he will merely repeat his explanation with more words and less good temper until his patience is exhausted.

Unlike apes, men are reasoning creatures, but they do not all reason in the same way. The best method of opening the way for insight will be to gauge, in the light of experience, the approach which gives the greatest help to the greatest number. After your first explanation, find out how many are still in the dark, and for their benefit try a completely fresh line of approach. And so on until everyone is clear.

Suppose you had to teach a stupid class the rotation of the world on its own axis and its simultaneous movement round the sun. The first approach could be through a simple diagram on the blackboard. The majority would understand at once. Searching questions, however, directed to likely quarters, might reveal some students still unenlightened. Try fresh explanations, ball-bearing set in a big flywheel, a catherine wheel pinned on the rim of a cartwheel, the tennis ball swinging round a bumble-puppy post, and soon you will have held out the solution to your problem in so many tempting guises that each man must find at least one which his insight cannot resist.

This can be summarized:—

Best explanation.

Test for understanding.

Fresh explanation.

Test for understanding.

Fresh explanation . . . and so on.



## FIXING STANDARDS

9

Most stages of training have their "passing out" standard. In small arms training, for instance, these are standard tests from the TsOET of the Primary Training Centre to the full field-firing exercise of the infantry battalion. This "passing out" standard is usually decided by outside factors; the soldier must reach such-and-such degree of ability to be efficient in the next stage of training. Ultimately he must reach such-and-such standard to be fit for battle. There is another factor which is important and which is seldom considered. Figure 5 is an imaginary learning curve of soldiers learning a certain skill.

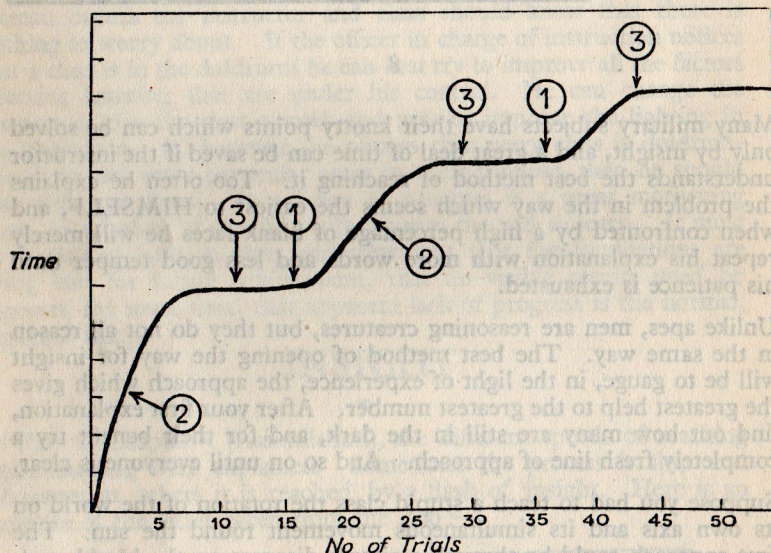


FIGURE 5

If the "passing out" standard is fixed by outside considerations without studying the course of learning, it might be placed at any of the positions 1, 2 or 3, according to the degree of proficiency required or the time available.

Consider, however, the morale of the class at either of the positions marked 1. They have shown little improvement for the last ten trials and they will pass the test in a period of doldrums. It can be seen also that by holding the test ten trials earlier, much time could have been saved and the standard of proficiency would not have been significantly lower.

To place the standard at either of the positions marked 2 would clearly be uneconomical. With very few more trials proficiency would have been significantly increased.

If, however, the standard is imposed at any of the positions marked 3, the class will have confirmed the rapid learning of the previous period and they will not have suffered the discouragement and the uneconomical effect of the subsequent plateau.

### RULE FOUR

In an irregular learning curve, tests should be imposed neither midway in a period of rapid learning nor at the end of a learning plateau, but at the earliest point in the plateau that will ensure the confirmation of the previous period of rapid learning.

## INHIBITION AND REINFORCEMENT

10

When we try to learn two similar things at once we get muddled. Suppose a boy at school started to learn Latin and Italian languages side by side. They are sufficiently alike for him to use Latin words when he is writing Italian, and Italian ones when he is writing Latin. The word "muddle" would look out of place in the scientific world, so this internal war between the two subjects is called INHIBITION. To inhibit means to forbid; one subject forbids the learning of another like subject. Figure 6 shows our imaginary schoolboy's process of learning.

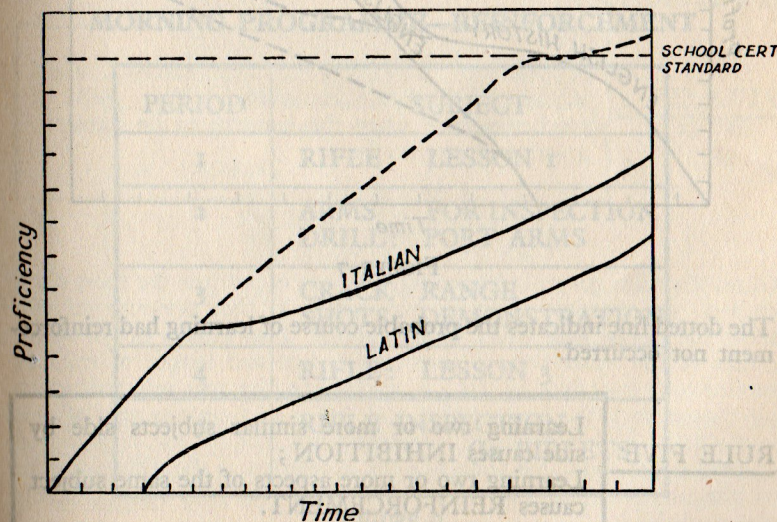


FIGURE 6



At first, Italian was learnt easily. When Latin was started, it too began well, but soon the two inhibited one another and the speed of learning dropped with both. Had no inhibition occurred we might have expected the schoolboy's learning to have reached exam standard as shown by the dotted line, but inhibition so checked his progress that he did not reach it nearly so soon.

11

The opposite of inhibition is REINFORCEMENT. If, instead of learning Latin and Italian, the boy had learnt Latin and Roman history, the learning of each would have confirmed and helped the learning of the other. Perhaps a better example is that of English history and English literature. A student might find English history dull and difficult to remember. When he starts, however, to study the literature of the same period he sees the scene from a new angle which confirms and reinforces the matter learnt in the history lesson. Also, by arousing greater interest, it may contribute towards motivation.

Here again is a graph of our imaginary student's process of learning :

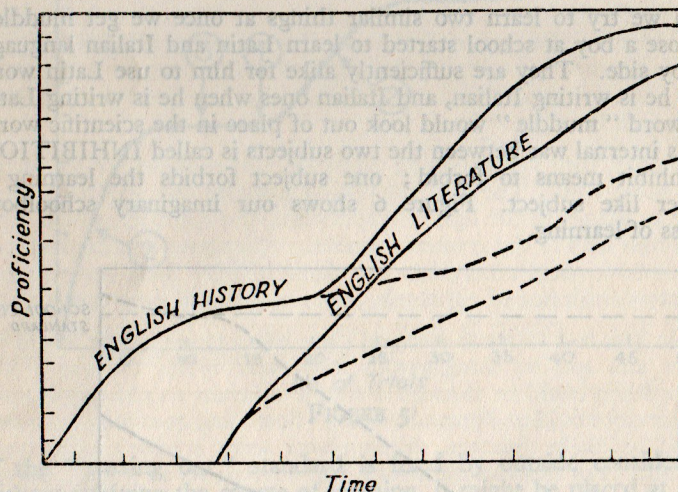


FIGURE 7

The dotted line indicates the probable course of learning had reinforcement not occurred.

#### RULE FIVE

Learning two or more similar subjects side by side causes INHIBITION ;  
Learning two or more aspects of the same subject causes REINFORCEMENT.

This rule is most commonly abused in the composition of a training programme. The following examples speak for themselves.

#### MORNING PROGRAMME—INHIBITION

PERIOD	SUBJECT
1	LMG : LESSONS 1 & 2
2	STEN : LESSON 1
3	RIFLE : LESSON 1
4	LMG : LESSONS 3 & 4
5	RIFLE : LESSON 3

FIGURE 8

By the end of that morning the student would be muddling safety catches with change levers, firing pins with strikers, and recoil springs with return springs. Common sense would forbid such an extreme example of inhibition, but investigation has shown that frequently two similar elementary lessons on two different weapons are taught in the same day.

#### MORNING PROGRAMME—REINFORCEMENT

PERIOD	SUBJECT
1	RIFLE : LESSON 1
2	ARMS FOR INSPECTION DRILL : PORT ARMS
3	CRACK RANGE SHOTS : DEMONSTRATION
4	RIFLE : LESSON 3
5	RIFLE INSPECTION (In BILLETS)

FIGURE 9



By the end of that morning the student should not only be well motivated but he should have a consolidated knowledge of the first and third lessons on the rifle. Lesson 1 (Care, cleaning and the names of the parts) has been taught from three different aspects, the initial lesson, the drill period and the period of practical cleaning and inspection in billets. Lesson 2 he has seen from two aspects, the demonstration of how it should be done and the lesson on how to do it. Although concerned with only one subject the programme does not lack variety.

## SATURATION

13

Inhibition can also be caused by an overdose of similar facts in the same subject. In the introduction to "1066 And All That," Messrs Sellar and Yeatman state that "two out of the four dates originally included were eliminated at the last moment, a research . . . having revealed that they are *not memorable*." There is an element of sense in this approach to instruction; as it is no use serving up food that is not eatable, so it is no use serving up instruction that is not memorable. And no matter how good the food, no one can go on eating the same dish at top speed for an hour without indigestion. Similarly in instruction, no one can go on assimilating the same type of facts for long without reaching saturation point. Suppose, for example, that you listen to a half-hour talk on the wireless and three days later you write down all you can remember. Again, a few days later you listen to a similar type of talk for ten minutes and once more, after three days, you write down what you can. You will find that you will have remembered slightly more about the ten-minute talk than you did about the half-hour talk. That is due to the principle of SATURATION.

### RULE SIX

A point of SATURATION is reached when learning is fast and continuous. This point is reached sooner when the material to be learnt is a series of similar facts.

14

Of all the rules governing learning, this one is perhaps the most often abused. An example from an experiment in film presentation will show the devastating effect of saturation. Two classes of 30 officer cadets of the same average intelligence, age and length of military service took part in this test. A 30-minute film was selected which set out to teach the organization and duties of a certain type of unit in the field. The facts taught were easily confused (*ie*, the organization of similar sub-units, the tasks of each in relation to the different arms of the service, etc). The subject matter of the film was extremely concentrated.

12

● Class A were shown the film in its entirety once. It was then discussed for 30 minutes and consolidated by the instructor. Next came a second showing, followed by the instructor's final summary.

● ● The same instructor showed the film to Class B in three 10-minute sequences. After each sequence there was discussion followed by a second showing of the same sequence, followed in turn by a summary.

● ● The same total time was expended on each method of presentation. Three days later the same test on the subject matter of the film was set for each class. The result was:—

CLASS A: 28·8%  
CLASS B: 78·3%

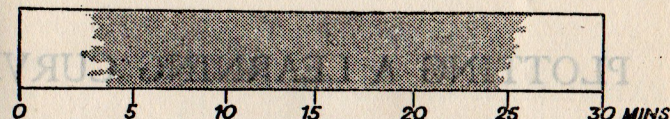
FIGURE 10

15

A brief investigation of the state of learning was held after each showing, and from this the evidence of saturation was gauged to be approximately as under:—

### CLASS A

#### 1st SHOWING



#### 2nd SHOWING

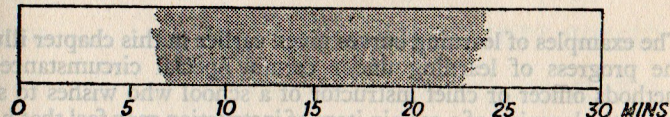


FIGURE 11

It will be observed that the beginning of the film, seen when the mind was fresh, and the end, which was the last image seen before relief, were remembered. The greater part in the middle was obliterated by saturation. This was only partially alleviated in the second showing.

13



## CLASS B

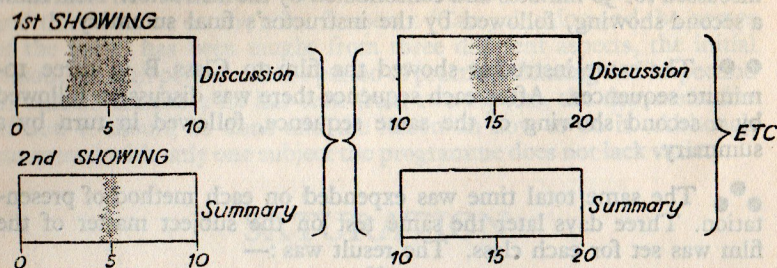


FIGURE 12

By showing the film in ten-minute sequences each sequence achieved approximately the same amount of clear learning as the first and last block of five minutes in the method used for Class A. On the second showing the small central patch of saturation entirely or almost entirely disappeared.

16

The lesson to be learnt from this example is of the widest application. It is difficult to generalize on such a subject, but it may safely be stated that most classes will reach saturation point after from 8—10 minutes of concentrated passive instruction, whether it be talking, demonstration or film. After that period the learning must be confirmed by summary, practice or by 'giving back' the material by means of questioning or tests.

## PLOTTING A LEARNING CURVE

17

The examples of learning curves given earlier in this chapter illustrated the progress of learning under certain special circumstances. The methods officer or chief instructor of a school who wishes to study in detail the learning of a certain item of instruction may feel that he would be helped by plotting the process as a learning curve.

This will only be worth his while when the item under investigation is of frequent occurrence, because the reliability of results drawn from small samples will be low, and the labour of undertaking such an investigation demands that the stakes should be high. If, however, he is concerned with the handling of large numbers of students on a short course, the frequency of certain items may reach 200—300 per month, and then it may be worth while to get a learning curve.

14

18

First of all, the test must be carried out with the care and accuracy of a surgical operation. Conditions must be unchanged for subsequent tests and full weight must be given to any variable factor which might invalidate results.

Secondly, if a chief instructor obtains a learning curve for a certain skill the result will not be a generalization of how that skill is learnt by soldiers; it will merely show the progress of learning of those particular soldiers, under that particular instructor, in that particular type of weather, at that particular school, and so on *ad infinitum*. To obtain a generalized result, hundreds of investigations under differing circumstances and conditions would have to be held. Even with a single school, probably the curves taken for several dozen classes would be a minimum sample to give a reliable result.

Thirdly, the factors may be intentionally varied in order to plot one result against another. For instance, you might plot Sjt Smith's class against an equally graduated class under Sjt Jones, or summer learning against winter learning, or after-breakfast periods against before-tea periods, but still a large sample would be essential to give each side a fair chance.

Finally, it must be remembered that in inexpert hands, statistics can be very misleading, and it is always advisable to have the figures checked by an expert before any conclusion is drawn from them.

15



## CHAPTER

# The Syllabus and The Training Programme

## INTRODUCTION

### I

This chapter is not a comprehensive survey of syllabus and programme building; it is complementary to the directions laid down in the Principles of Training, 1945, and in various of the Arms series of pamphlets. The factors selected for consideration are either those which are not adequately covered by any other publication, or those which, by their neglect in practice, are evidently not fully understood. The later sections are a survey of some of the more practical problems of programme building and presentation.

### PREVIEW—CHAPTER 2

						Sections
FATIGUE AND EFFICIENCY	..	..	..	..	..	2-12
TEMPO	..	..	..	..	..	13-19
GROUP STRUCTURE	..	..	..	..	..	20-27
THE BASIS OF THE SYLLABUS	..	..	..	..	..	28-31
ORGANIC GROWTH	..	..	..	..	..	32-35
PRESENTING THE PROGRAMME	..	..	..	..	..	36
STANDARDIZATION	..	..	..	..	..	37
LIMITING FACTORS	..	..	..	..	..	38-39

## FATIGUE AND EFFICIENCY

2

There are two types of fatigue, physical and mental. The student who has completed a hard day's technical training in the classroom will suffer from mental fatigue. His eyes and face-muscles will feel tired; he will tend to be emotional and irritable; he avoids more mental work and finds it hard to make decisions. He wants to relax, yet thoughts keep crowding in on his mind. The remedy for mental fatigue is recreation, outdoor exercise or any activity which will hold his interest without making demands on his brain.

The man who has been carrying sacks of coal upstairs all day suffers from physical fatigue. His muscles are tired. His body feels heavy. It is an effort for him to think. He needs a good sit-down. Sugar or chocolate will freshen him by replacing the blood sugar he has used up. In extreme cases he needs complete relaxation and sleep. Often physical and mental fatigue go together. Leaders in the Army, when they are tired, nearly always suffer from both types.

Here is an experiment in measuring mental fatigue. A man was set a series of arithmetical problems consisting of the mental multiplication of two sets of four figure numbers. Starting at 1100 hours he continued without a break until 2300 hours, completing 67 problems. The time taken for each problem increased from five minutes for the first, to approximately ten minutes for the last. That was due, quite understandably, to fatigue.

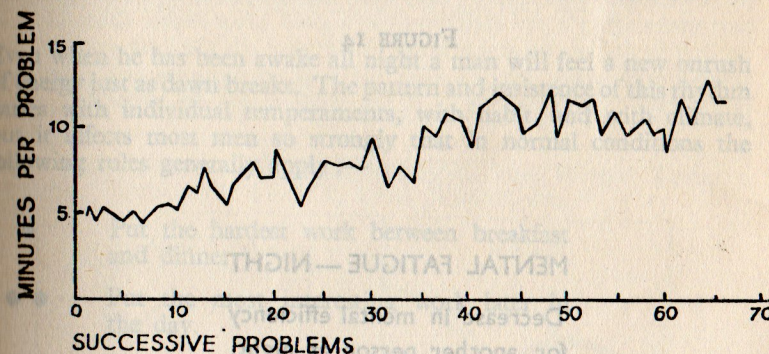


FIGURE 13

### MENTAL FATIGUE — DAY

Decrease in mental efficiency as a result of mental multiplication over 12 hours during the day.



A different man was set the same test starting at 2300 hours after a full day's work. For the first 20 problems he did as well as the other, taking about an hour and a half. Then he went to pieces, taking up to 25 minutes for a single problem.

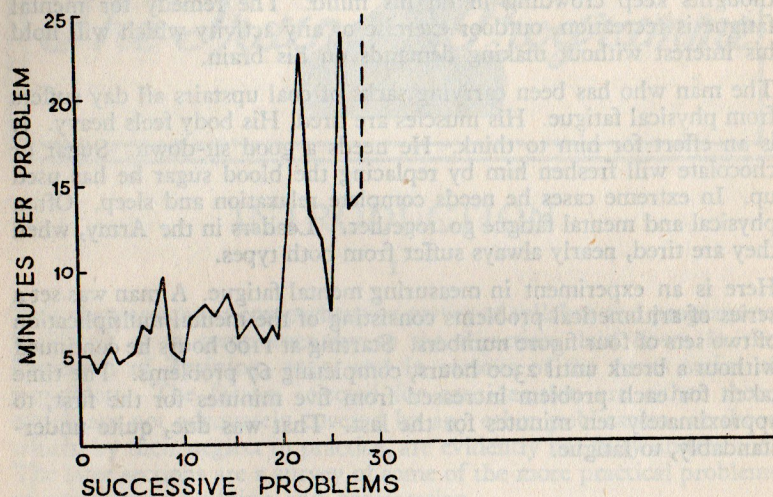


FIGURE 14

### MENTAL FATIGUE — NIGHT

Decrease in mental efficiency  
for another person at night.

The first man was still capable of good mental work at the end of the test, the second had to be helped to bed. Allowing for the different conditions and personalities, there is an additional factor which is worth noting.

In man's life there is a natural rhythm of getting up soon after dawn and going to bed sometime after sunset. This rhythm is extremely hard to break; even after long spells of night training and day sleeping a man will still show proneness to fatigue in approximately the following proportions:—

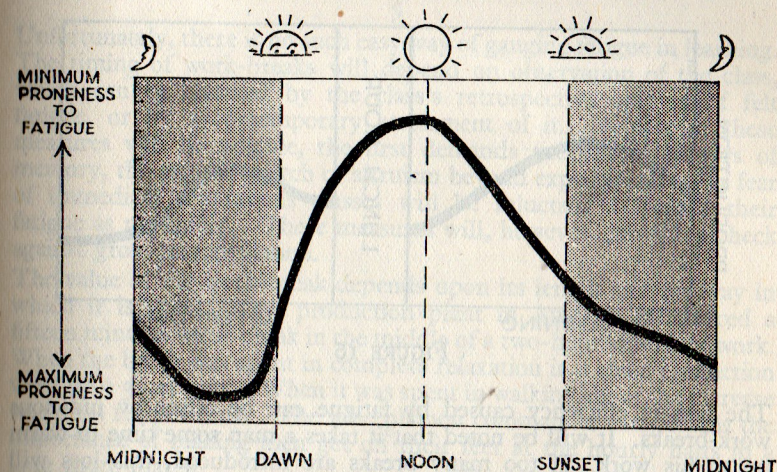


FIGURE 15

Even when he has been awake all night a man will feel a new onrush of energy just as dawn breaks. The pattern and insistence of this rhythm varies with individual temperaments, with habit, and with climate, but it affects most men so strongly that in normal conditions the following rules generally apply:—

- Put the hardest work between breakfast and dinner.
- ● Put the most interesting work later in the day.
- ● Put short night exercises designed to TEACH shortly after dusk.
- ● Put night exercises designed to TEST between midnight and dawn.
- ● ● NEVER try to TEACH in the hours before dawn.



This rhythm, together with the cumulative fatigue of the day, shows itself in industry in the following typical daily work curve of the physical fatigue of a manual labourer :—

#### DAILY WORK CURVE

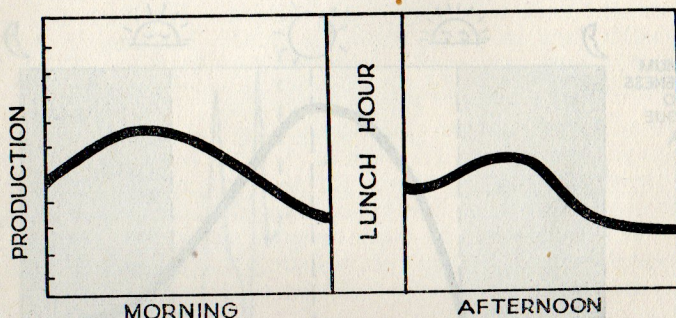


FIGURE 16

The loss in efficiency caused by fatigue can be offset by judicious work-breaks. It will be noted that it takes a man some time to warm up to his work. If too many breaks are introduced, this loss will overbalance any gain. It is more economical to remedy fatigue before it becomes too acute; the less fatigue the shorter the rest required to restore full efficiency. This can be compared to the system of part-exchanging a car each year for a good price rather than using it until it is fit for the scrap heap. In Figure 16 the best position for work-breaks would be just after the peak of morning and afternoon production. Even the result is not what might be expected.

#### WORK BREAKS

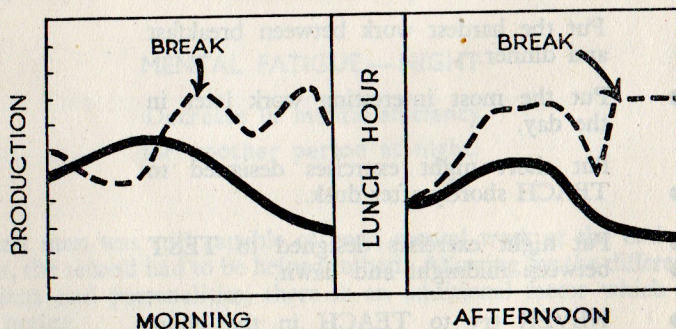


FIGURE 17

Other factors have entered in. The anticipation of the break caused a slow start, but a spurt before it arrived. The same tendency appeared in the second period, but the man was rested, in the swing of his job, and working more efficiently. In the afternoon the break seemed more distant, and he worked well, falling off just before it was due, perhaps because he had expected it sooner. He finished off the day's work by working more efficiently than at any other time. On the whole, then, the breaks were worth while.

5

Unfortunately, there is no such easy way of gauging fatigue in learning. The timing of work-breaks will depend on observation of the class, which can be checked by the class's retrospective opinion of felt fatigue, or by a contemporary assessment of it. Neither of these measures will be reliable, the first demands exceptional powers of memory, the second a pitch of altruism beyond expectation. For fear of immediate reparations classes will be reluctant to record their fatigue as negligible. These measures will, however, provide a check against gross miscalculation.

The value of the work-break depends upon its length and the way in which it is spent. One production plant in America introduced a fifteen minutes work-break in the middle of a two-hour stretch of work. When the break was spent in complete relaxation in a chair production went up 9.3 per cent. When it was spent in walking about the increase was only 1.5 per cent. The wise platoon commander early learns the importance of making men get off their feet at the hourly halts in a long route march.

If the break is too long it will waste time, or it may do positive harm by allowing a man's muscles to harden up. If it is too short it will interrupt the rhythm of work without eliminating fatigue.

6

This has an important bearing on the timing of periods in the training programme. Figure 18 is a typical example of a morning programme arrangement. It was taken from a generalized Infantry course, in which the subjects were a mixed bag of PT, Drill, Weapon Training, Lectures, Discussions, TEswT, Cloth Models, etc.

#### MORNING PROGRAMME

##### ORIGINAL TIMING

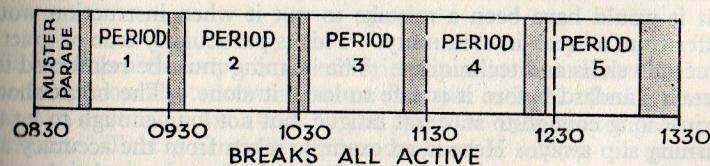


FIGURE 18



On paper it looks as if there were adequate and sensible work-breaks. Investigation showed, however, that owing to instructors overstepping their time, to the distances between places of parade, to changes in dress, etc., the classes were more active in the work-breaks than at any other time. They were always in a hustle, and frequently doubling from point to point. Had all the periods been classroom work this would have been an excellent arrangement. The majority of periods, however, were active, and owing to various limiting factors it was not always possible to sandwich them with the indoor lessons. Hence, if a man had a bayonet lesson followed by a PT period followed by two periods of drill, he had, in effect, no work-break at all. For this reason the periods were re-arranged in the following ways:—

#### MORNING PROGRAMME REVISED TIMING

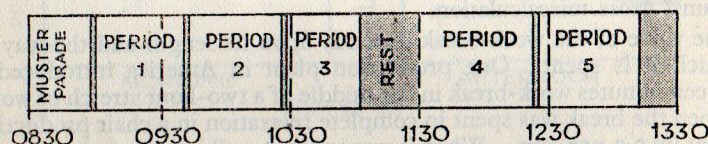


FIGURE 19

In effect, this programme put on paper what had been happening in practice, *ie*, that classes left one place to go straight to the next, and it inserted a full half-hour's break in the middle of the morning. The change resulted in a great increase in efficiency. Unless there are frequent and rigorous campaigns to ensure punctuality, the tendency for instructors to impinge on the breaks may be taken to be inevitable. It is often better, as in this example, simply to make the instructor responsible for his class reaching the next place of parade punctually. All instructors can see the value of a punctual start, many will fail to see the importance of respecting a break, which they may consider, however mistakenly, as ten minutes of unproductive idleness. Even the most ardent instructors, however, must respect a break of 20–30 minutes, which the class regard as a minor holiday.

7

The half-hour break described in the last section served its purpose. But it would have been a mistake to put it when instruction would suffer from a break in continuity. This is particularly true of practice in certain skills and techniques. The learning must be reinforced to a certain standard before it is safe to leave it alone. The break should be just long enough to stave off fatigue, but not long enough to let the learning slip away. Here is an example taken from the accuracy and time curves of 10 men learning a skill for the first time—the changing of the gas regulator on the LMG.

#### BREAKS IN CONTINUITY OF LEARNING

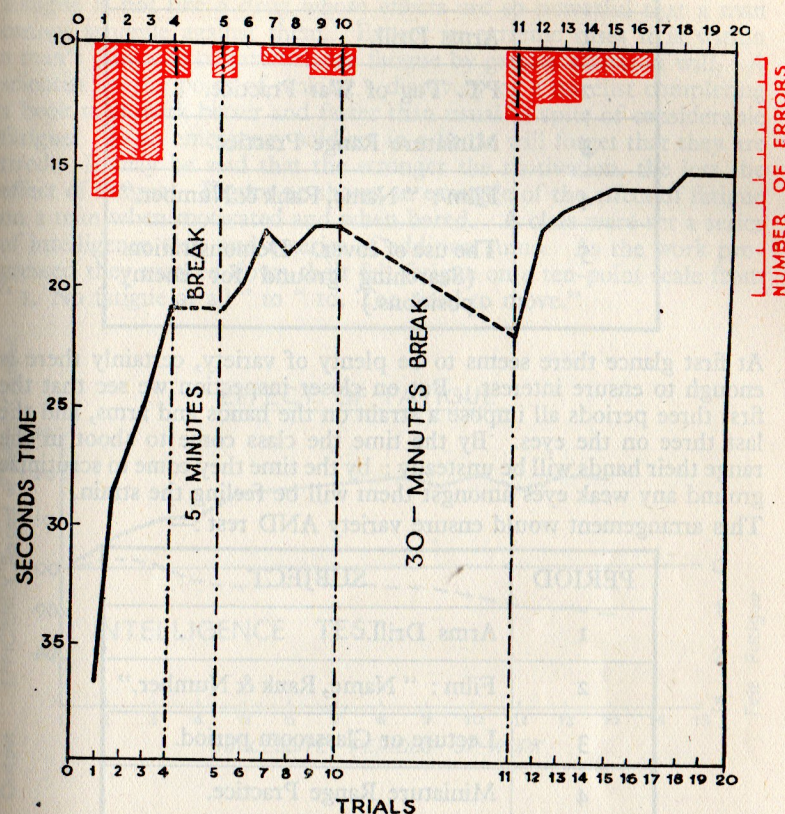


FIGURE 20

Learning progressed well in the first four trials. After a break of five minutes the class had lost no accuracy and only a little speed. At the sixth trial they touched maximum accuracy, but then they grew tired, or perhaps bored. After the tenth trial they were given half an hour's break. On restarting their accuracy had gone to pieces; it took seven more trials before they reached maximum and two trials before their speed once more began to improve.

8

We have seen the importance of variety in arousing interest. Variety in occupation also serves the same purpose as rest. In his time off the film critic goes for a walk in the park, the park-keeper goes to the pictures. This is generally well understood in solving the time-table jigsaw, but the following example taken from an actual training programme shows how easily it can be forgotten.



PERIOD	SUBJECT
1	Arms Drill.
2	PT. Tug of War Practice.
3	Miniature Range Practice.
4	Film : " Name, Rank & Number."
5	The use of cover. Demonstration. (Searching ground for enemy positions.)

At first glance there seems to be plenty of variety, certainly there is enough to ensure interest. But on closer inspection we see that the first three periods all impose a strain on the hands and arms, and the last three on the eyes. By the time the class come to shoot in the range their hands will be unsteady ; by the time they come to scrutinize ground any weak eyes amongst them will be feeling the strain.

This arrangement would ensure variety AND rest :—

PERIOD	SUBJECT
1	Arms Drill.
2	Film : " Name, Rank & Number."
3	Lecture or Classroom period.
4	Miniature Range Practice.
5	PT. Tug of War Practice.

9

No matter how well the work-breaks may be arranged and no matter how well varied the programme, if the total effort demanded from the student is too great he will suffer from cumulative fatigue. In a munitions factory it was found that by reducing the working week from 58 to 50 hours the weekly output was increased by 21 per cent. Eight hours more rest more than compensated for eight hours less work. Cumulative fatigue is uncommon in the Army because routine is not so inflexible. A hard week's work may be followed by two slack weeks. In a long course of training, however, this principle, together with that of saturation, should bring the chief instructor to watch carefully for the preliminary signs of fatigue. In its later stages the symptoms of cumulative fatigue are complaints of staleness and a general lowering of morale, but the good instructor should have cut the hours of work long before these have appeared.

10

Fatigue is not like a drug whose effects are so powerful that a man cannot struggle against them. Except in extreme cases it is within a man's power to counterbalance fatigue by greater efforts of will. A scientist on the point of making a discovery or a novelist completing a book may work better and faster than usual in spite of considerable fatigue. In an emergency soldiers in a battle will forget that they are tired. It may be said that the stronger the motivation, the less the effect of fatigue. Figure 21 shows an example of the effect of fatigue on a man when motivated and when bored. A class were set a series of intelligence tests and a series of addition sums. As the work progressed they marked down their felt fatigue on a ten-point scale from "1. No fatigue at all" to "10. Too tired to move."

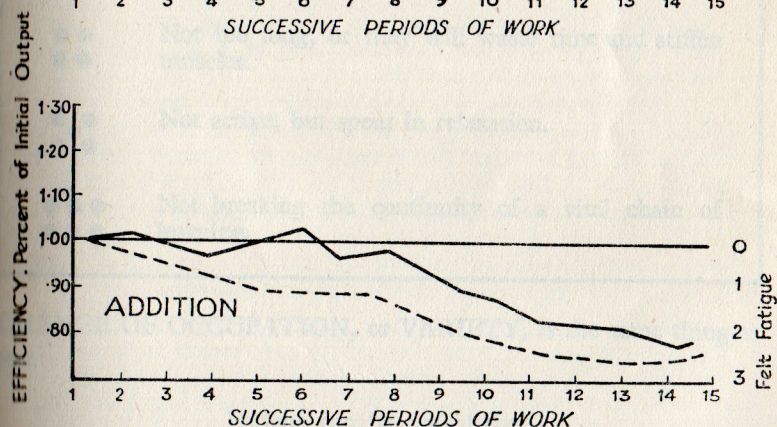
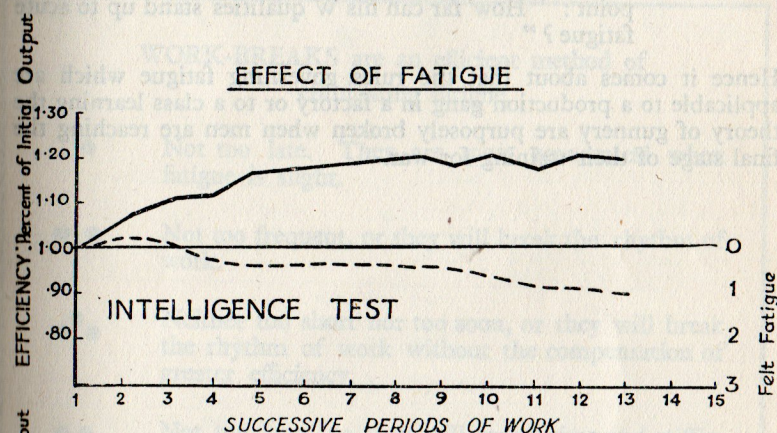


FIGURE 21

The class found the intelligence tests interesting and their output increased although their fatigue was increasing as well. The addition was dull, and their output fell as they grew tired.



Motivation can offset fatigue. This is important in training for two reasons :

**FIRST :** It is often desirable to arrange a programme to ensure motivation rather than to insure against fatigue. A man learns more when he is tired and interested than when he is fresh and bored.

**SECOND :** A man has to be taught how to withstand fatigue. He has to be toughened and tested to train him for the fatigues of battle. He has to learn what it is like to carry out his duties when he is dead tired. One of the most important characteristics of the soldier is this very point : "How far can his W qualities stand up to acute fatigue ?"

Hence it comes about that the rules governing fatigue which are applicable to a production gang in a factory or to a class learning the theory of gunnery are purposely broken when men are reaching the final stage of their training for war.

## SUMMARY

### FATIGUE AND EFFICIENCY

**FATIGUE** may be **PHYSICAL**, **MENTAL**, or both together.

**PRONENESS** to fatigue follows a natural 24-hour rhythm.

**WORK-BREAKS** are an efficient method of eliminating fatigue.

- Not too late. They are most economical when fatigue is slight.
- ● Not too frequent, or they will break the rhythm of work.
- ● ● Neither too short nor too soon, or they will break the rhythm of work without the compensation of greater efficiency.
- ● ● Not too long, or they will waste time and stiffen muscles.
- ● ● Not active, but spent in relaxation.
- ● ● Not breaking the continuity of a vital chain of learning.

**CHANGE OF OCCUPATION**, or **VARIETY**, is the same thing as rest.

Fatigue can be cumulative

Motivation offsets fatigue

Men must be trained to withstand fatigue.



# TEMPO

13

Sometimes men work slowly and methodically. At others they work faster. Occasionally they work at full speed. The same can be said of business organizations, production plants or railway companies. The London Passenger Transport Board has its slack periods and its rush hours, and the pressure of work can be graphically represented thus :

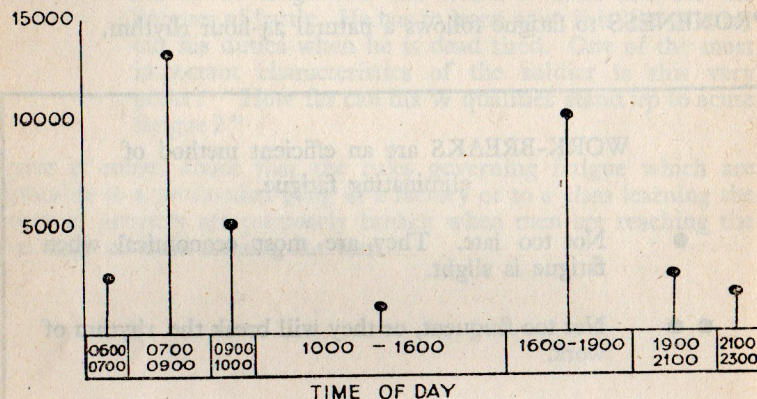


FIGURE 22

## TEMPO—EXAMPLE.

Based on an investigation to gauge the number of passengers carried per half-hour, held at a station on the Edgware-Morden line in 1936.

(Reproduced by courtesy of the London Passenger Transport Board)

Similarly the degree of activity, or the degree of pressure at which a man's mind and body are functioning can be assessed over a period of hours or days. The motive power for this activity is supplied by nervous energy, and the rate of expenditure of nervous energy is called TEMPO. In training, tempo is decided by a sense of urgency dictated by the instructional staff and reciprocated in the keenness and enthusiasm of the students. High tempo means high nervous effort.

Keenness and enthusiasm, however, must fluctuate in cycles. They will have their peaks and their troughs ; men cannot be kept strung up to a high pitch for weeks on end without any relaxation. Even the most enthusiastic football fan would be bored by a match that lasted for three days. Nor can the tempo of training be increased or slackened at a moment's notice. The tempo of a lesson, of a day's work, or of a whole month's course must be carefully considered and planned in the preparation phase.

It is difficult to lay down a set of general rules for the control of tempo.

By studying some particular examples, however, the factors which underlie the proper control of tempo in training will emerge.

14

Here is the tempo of a period in which the instructor taught one new skill and revised several old ones. The skills were such that they demanded high activity.

## TEMPO OF SKILL PERIOD — 1<sup>ST</sup> ARRANGEMENT

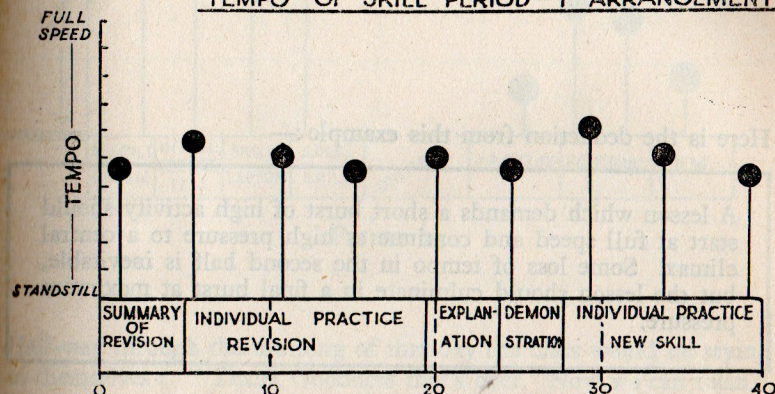


FIGURE 23

This lesson started with a spoken summary of past skills ; this called for little activity from the class. Individual practice in the old skills increased the tempo a little, but soon it tailed off with cumulative boredom. The explanation, demonstration and practice of the new skill were not enough to jerk the sluggish class into real activity and the lesson closed quietly.

## TEMPO OF SKILL PERIOD — 2<sup>ND</sup> ARRANGEMENT

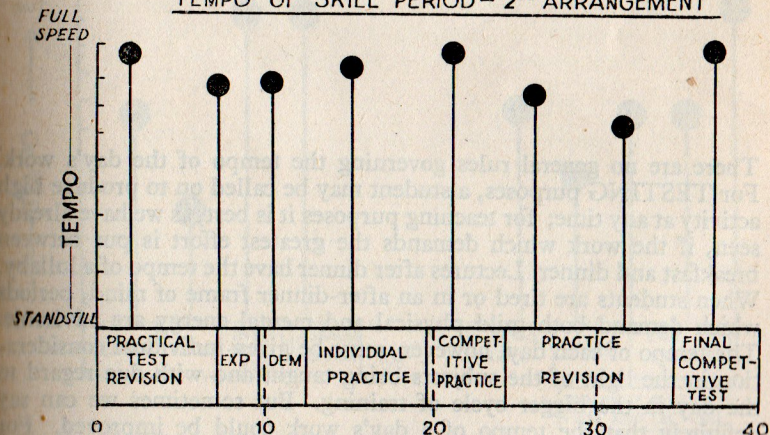


FIGURE 24



This lesson started with a bang by giving the class a practical test of skills already learnt. After the explanation and demonstration they went on to practise the new skill with a will, anticipating a competition in ten minutes' time. The tempo was allowed to drop during the revisionary practice, but the period finished at full speed with a final set of competitive tests. It is worth noting that the tempo of the period depends as much on how the instructor varies the urgency of his manner as on the layout of the lesson.

Here is the deduction from this example :—

A lesson which demands a short burst of high activity should start at full speed and continue at high pressure to a central climax. Some loss of tempo in the second half is inevitable, but the lesson should culminate in a final burst at maximum pressure.

15

There are no general rules governing the tempo of the day's work. For TESTING purposes, a student may be called on to produce high activity at any time; for teaching purposes it is best, as we have already seen, if the work which demands the greatest effort is put between breakfast and dinner. Lectures after dinner have the tempo of a lullaby. When students are tired or in an after-dinner frame of mind, periods which demand both mild physical and mental energy are advisable. The tempo of each day, however, must be given individual consideration in the light of the subjects being taught and with due regard to the day in the bigger cycle of training. But sometimes we can say definitely that the tempo of a day's work could be improved. For instance :—

## DAY'S PROGRAMME-1<sup>ST</sup> ARRANGEMENT

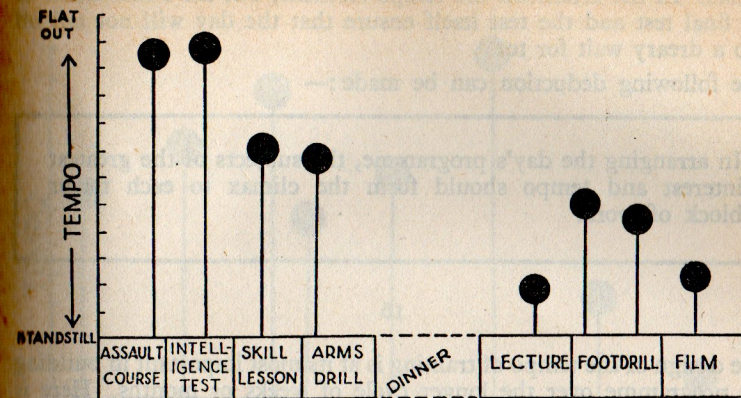


FIGURE 25

Half-way through the morning of that day the class would be saying to themselves: "Thank Goodness that's over. Now we can relax." The most interesting and exacting work is completed by twelve o'clock.

## DAY'S PROGRAMME-2<sup>ND</sup> ARRANGEMENT

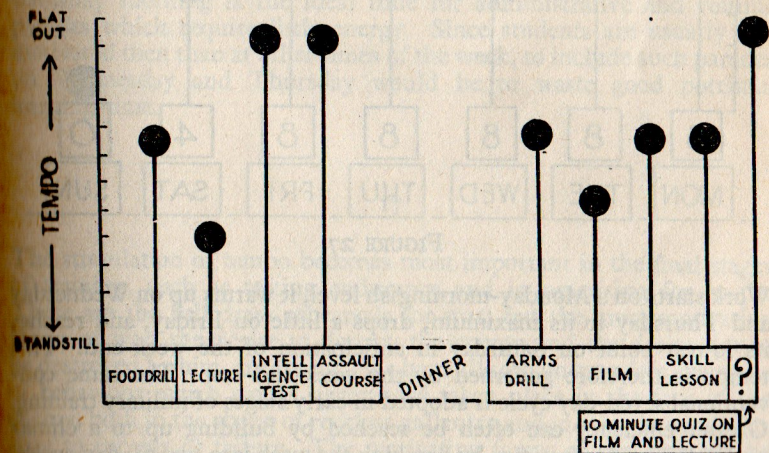


FIGURE 26



Arranged in this way, the morning is a drama in itself with a fitting climax. In the afternoon the tempo slackens, but the anticipation of the final test and the test itself ensure that the day will not tail off into a dreary wait for tea.

The following deduction can be made:—

In arranging the day's programme, the subjects of the greatest interest and tempo should form the climax to each major block of work.

16

The design of the tempo of training is at its most important in building the programme over the longer cycle of weeks or months. Here is the customary tempo of routine work over a week in factory or classroom:—

### TEMPO - ROUTINE WORK

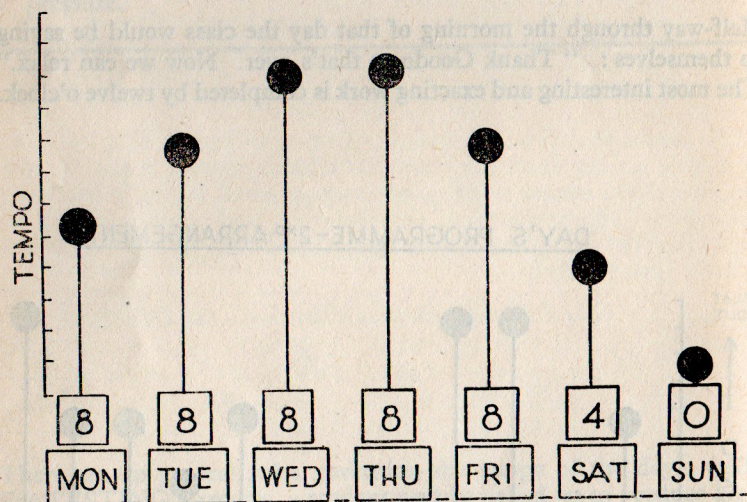


FIGURE 27

Work starts on a Monday-morningish level, it warms up on Wednesday and Thursday to its maximum, drops a little on Friday, and reaches its lowest point on Saturday in anticipation of the week-end. This tempo is therefore governed by the week-end rest. The same conventional seven-day cycle is adopted in early stages of military training. Greater efficiency can often be reached by building up to a climax on Friday, and sometimes by breaking the week into two  $2\frac{1}{2}$ -day cycles. Both of these effects are achieved in Figure 28.

### AN EFFICIENT WEEKLY TEMPO

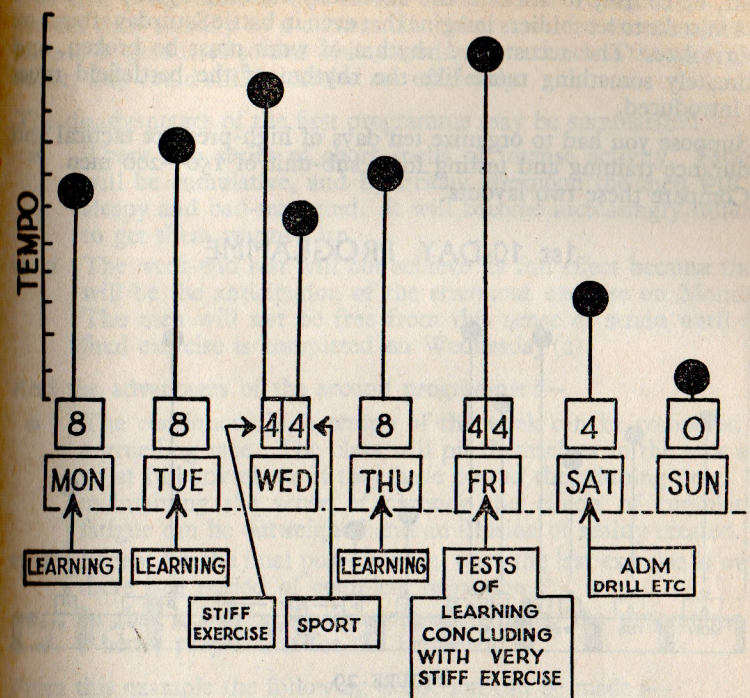


FIGURE 28

Saturday morning is the ideal time for administrative and routine parades which require little energy. Since students are usually less motivated than at other times of the week, to include such parades on Wednesday and Thursday would be to waste good potential learning-time.

17

The stimulation of tempo becomes most important in the final stages of training, such as testing endurance and in practising for battle. These are the full dress rehearsals for war, but the great motivating forces of war, the desire to destroy the enemy and the desire not to be destroyed by him, are absent. We have all seen on exercises examples of behaviour which would never have taken place in the face of the enemy, both in the shape of reckless gallantry and in complete indifference to success or failure. The motivating forces of real war can be replaced, to a certain extent, by fostering an attitude of realism and urgency, which can only be achieved if the tempo is sustained over



a long enough period to create an illusion of reality. There is no need, of course, to stick to the seven-day training cycle; it would be a mistake to let soldiers imagine that even in battle Saturday afternoon is inviolate. The accustomed rhythm of work must be broken, and ultimately something more like the rhythm of the battlefield must be introduced.

Suppose you had to organize ten days of high-pressure tactical and endurance training and testing for a sub-unit of 150—200 men.

Compare these two layouts.

### 1st 10-DAY PROGRAMME

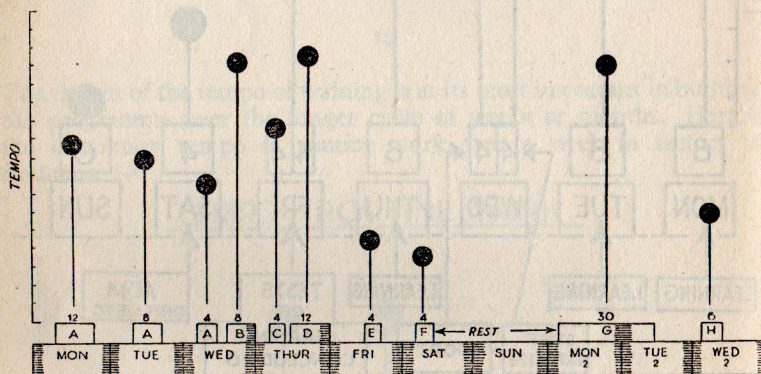


FIGURE 29

### 2nd 10-DAY PROGRAMME

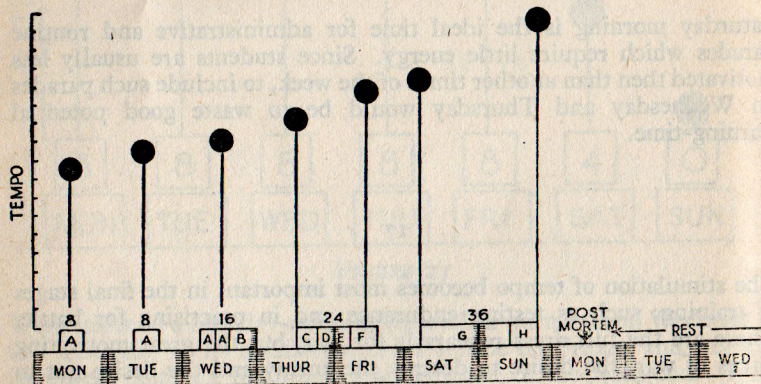


FIGURE 30

Blocks of work marked "A" indicate the preparatory and revisionary work necessary before the exercises can be held. Each subsequent block represents a TESTING exercise of some sort.

The first programme is tied to the conventional weekly cycle. The second runs steadily to a climax. In either case the exercises would have to be graduated so that while exacting from the class the maximum effort, they could still be carried out efficiently.

The disadvantages of the first programme may be summarized:—

- There is a series of short spells of intense activity. Fatigue will be cumulative, and by Friday afternoon the men will be sleepy and bad-tempered. It will become increasingly difficult to get them warmed up.
- The week-end rest will not achieve its full effect because there will be the anticipation of the strenuous exercise on Monday. The men will not be free from this sense of strain until the final exercise is completed on Wednesday (2).

And the advantages of the second programme:—

- The continuous high tempo of the week can be compared to a gruelling race. The class will pit themselves to the task and go at full stretch until they have passed the winning post. By maintaining the sense of urgency the effects of cumulative fatigue can be outweighed and an illusion of reality created.
- Except for the final post-mortem, once the last exercise is over, there is a period of complete relaxation.
- In that it breaks all accustomed rhythms, the programme is
- a better preparation for the battlefield.

From this example the following deduction can be made:—

In arranging the longer cycles of training, the tempo should reach a series of climaxes each followed by a period of relaxation. In the final stages of training for war, a high sustained tempo creates an illusion of reality and to some extent replaces the great motivating factors of real warfare.

The post-mortem on the final exercise was held in the rest-pause after a spell of intense activity. It is often a good plan to arrange a period of comparative tranquillity during which the previous learning can be reviewed and assimilated. At the end of a day of intense mental activity a keen class will benefit from half-an-hour's period of individual study. This is best carried out in the classroom with an instructor present to discuss difficulties and answer questions. This period should not follow too closely the last period of learning in the cycle. If it is to review the day's programme it should be after tea; if to review a week's work, the morning after the last day.

But before leaving the subject of tempo, it is worth noting that as the instructor's manner affects the tempo of a period, so the atmosphere of a school affects the tempo of a course. This was well demonstrated by the Battle School courses in 1941 and 1942 when all training was



carried out at the double. The atmosphere was such that even the most lethargic student was infected with the sense of urgency which animated the course from the first moment to the last.

19

## SUMMARY

### TEMPO

TEMPO is the degree of nervous energy expended by the class in training.

#### DEDUCTIONS FROM EXAMPLES: —

- ONE A lesson which demands a short burst of high activity should start at full speed and continue at high pressure to a central climax. Some loss of tempo in the second half is inevitable, but the lesson should culminate in a final burst at maximum pressure.
- TWO In arranging the day's programme, the subjects of the greatest interest and tempo should form the climax to each major block of work.
- THREE In arranging the longer cycles of training, the tempo should reach a series of climaxes each followed by a period of relaxation. In the final stages of training for war, a high sustained tempo creates an illusion of reality and to some extent replaces the great motivating factors of real warfare.

## GROUP STRUCTURE

20

Human beings seldom live a detached life of self-sufficiency. They are all, to a greater or lesser extent, members of groups. The group may be the family, the club, the office—all or some of many such social structures. We find that a man's character is not formed solely from within himself, but that it is to some extent conditioned by the group of which he is a member. Not only will he tend to identify himself with the ideas and thoughts of the group, but he will be influenced by his personal position in relation to that of the other members. Thus we can notice characteristics peculiar to an only child, to a successful business man, to a schoolmaster and so on. The personalities within every group become mutually attuned; this network of personal relationship we call GROUP STRUCTURE.

21

If eight hens are put in a pen together for a month or two they will become a social group, structured in certain definite ways. One of these becomes apparent in their "pecking order." H1 will peck all other hens but will rarely be pecked back. H2 will peck all but H1, and will enjoy immunity from all but her, and so on until H7 and H8 are universally pecked without any unchallenged right to peck back. Definite individual characteristics become apparent. H1 is a stately, confident bird, neither aggressive nor quarrelsome. H7 and H8 are seedy, vicious individuals, mean, in the American sense of the word, a continual source of trouble. Yet a certain intangible group morale is formed, the hens lay bigger, better, and more frequent eggs than they did when working as individuals.

Again, if two cocks C1 and C2 are brought up from chickenhood in a pen with eight pullets, one will mature with a fine comb, a clear crow and a firm tail. He will take charge of the roost as a cockbird should. But C2 will be a neurotic from the start. His comb will be flabby, his crow hoarse, and his tail dragged. He will take no part at all in the social life of the group, whereas C1 will play a very essential part indeed. C1, moreover, is free to enter other similar social groups at will, and will gain immediate acceptance. C2 is doomed to be an outcast from all farmyard society.

22

From hens to humans may seem a far cry, but many of the lessons drawn from the henroost have an application to our society. The first point to note is that, like hens, men work better in groups than as individuals. The British are a race of good mixers, and any handful of men thrown together with some common purpose will soon fit into a group structure. There will be the leader and the led, and even the latter will fall naturally into an approximate order of importance. A spirit which distinguishes that group from any other will emerge; it will clothe itself with an individuality which is loosely defined as *esprit de corps* or group morale.

In his Army life the soldier is the basic unit in a graduated series of groups, each with its own distinctive group morale. Seen through his eyes, the graduation looks something like this:—

Me.

Joe, Jim, Jock and me.

Our Section (Detachment, Sub-section, etc.).

Our Platoon (Troop).

Our Company (Battery, Squadron, etc.).

Our Battalion (Regiment).

Our Regiment (Arm of the Service).

The Brigade, the Division, the Corps, the Army, etc.



The last groups are so large that often the soldier does not consciously identify himself with them. It is a proof of good *esprit de corps* in a formation if a man is as proud of being a member of X Division or Y Army as he is of being a soldier in No. 17 Platoon or in B Battery.

23

The smallest group is that of from three to six or seven men. Usually this group will centre round one or two dominant personalities. These men dictate the tone of the group. If their influence is good the group performance will be considerably higher than that of the sum of the individuals. If it is bad, that is if it is antagonistic to the spirit of service in the Army, the group will form a dangerous clique which, in turn, may dominate the larger group, the platoon, troop or section. In these circumstances the clique must be broken up. Most often, however, the influence will be in line with the dominating influence of the higher group (the officer or serjeant). This is common sense, for the good soldier receives encouragement and the bad one discouragement. Hence, unless the black sheep has a particularly strong personality, men will tend to cluster round the person whose influence is, in every sense of the word, the best.

This type of group structure needs no active encouragement; loyalties between comrades will inevitably be formed of themselves. They must, however, be given a chance to mature. There is a great difference between a team of expert footballers raked together for a scratch match and the same team when it has played together for a season. Similarly there is a great difference between a platoon of thirty individuals, no matter how well trained, who have never seen each other before, and a platoon in which loyalties between individuals are well formed and firmly cemented.

24

There are many practical steps that can be taken in organizing training to ensure that basic group structures will have a chance to form and mature.

- Never change men from sub-unit to sub-unit unless it is unavoidable. Draw up the long-term plan so that sub-units will be as stable as possible during each phase of their training.
- ● If a sub-unit must be re-formed, allow men to group themselves into threes and fours and transfer these little groups intact to the new sub-unit.
- During all training and teaching use the small group of friends as a unit in competitions, duties, fatigues, demonstrations, etc.
- ● If a man is left to flounder in a welter of constantly changing companions, he may never have time to find his niche in any group. Being forced to rely on his own resources, he may become aloof, suspicious and unpopular. He will acquire some

of the characteristics of C2 in the henroost example, and will be a difficult personality to weld into a team.

Although a man's higher loyalties, to the Army, to his senior officers and to his unit may seem as sound as a bell, the foundation upon which all other loyalties are built must be firm. In times of stress, the basic link in the chain of loyalty within the Service is that of a man to his comrades, and their loyalty to him.

25

This is no place to discuss in detail the factors affecting the morale of higher group structures. The choice and training of the man who dominates the group is of the greatest importance. Leadership is group dominance, hence the unceasing efforts of the Army to find and train leaders. Pride of Regiment, pride of Service and careful team building have considerable effect upon the group during training, but all other factors are subordinate to the quality of the individual leader. During training, the leader and the instructor are often the same person.

26

When the class can be regarded as a group in itself, that is, when it is unnecessary to train men in operational groups such as gun crews, sections and platoons, quicker learning can be achieved by graduating men by ability. The ability required will differ with the type of learning (for instance, PT requires physical ability, clerical training requires verbal facility, and so on), but for a generalized course of military training, intelligence gives the best index of a man's all-round ability to learn.

Instead of forming classes from the alphabetical order of the students, or from the order in which they report on arrival, if they are graded into classes by intelligence, several advantages will accrue:—

- Group structures are formed more quickly and are more complete amongst men of equal intelligence. If, for example, a class consisted of three clever men, four average and three stupid, they would probably fall naturally into those groups. But if it contained four clever, five average and one stupid, the stupid man might be in the position of an outcast, unable to enter any group successfully.
- ● Competition is keener when the range of performance is small.
- ● Good teaching is easier and less time is wasted when the speed of assimilation is the same over the whole class.
- ● Stupid men will not be depressed by the gulf between their own performance and that of the brilliant men. All evidence shows that in a squad of mixed ability the best students by their example do more to depress than to inspire the weaker brethren.



And the following disadvantages must be considered:—

- Group morale will suffer if men know they have been classed together because they are below average ability. This can be avoided if squad numbers are changed from course to course. For example, if there are three squads, above average, average, and below average, or +, o, and - on Course 1, they can be designated + = B, o = A, - = C, and on Course 2, + = C, o = B, - = A. It will be easier to allay suspicion if classes are housed and taught quite separately and if results are made known only within classes.
- ● Different speeds of learning will call for a different syllabus for each class. All classes will not reach the same standard in the same time. This disadvantage is counterbalanced by the certainty that every student will be given a chance to assimilate thoroughly all that he is taught.

These disadvantages can be largely offset if only two classes are selected, above and below average. The difference between classes is not then so apparent.

27

## SUMMARY

### GROUP STRUCTURE

- GROUP STRUCTURE is the network of personal relationship within a group.
- ● LOYALTIES between individuals in small groups form the basis of all loyalty within the Service.
- ● TO ALLOW individual loyalties to mature, groups of individuals should be allowed to remain stable.
- ● THE QUALITY OF THE LEADER is the dominating factor in the larger group structures.
- ● CLASSES OF GRADED ABILITY ensure a more satisfactory group structure and more efficient learning.
- ●

## THE BASIS OF THE SYLLABUS

28

As in the preparation of a lesson, the first step in building or in reviewing a syllabus is to clarify the object. Usually there will be a directive from the relevant headquarters or branch laying down clearly the object and scope of a specific course of training. Within units this will be done by the Commanding Officer. The directive must be studied and absorbed by the chief instructor until it dominates his outlook. When a syllabus is being reviewed there are two ways of checking how well it is achieving its object. The first is to get the opinion of the units who receive the finished product, the second is to get the opinion of those products themselves. Suppose a school runs a five-week course to train junior NCOs. A month or two after each student has passed out the Commanding Officer of his unit can be sent a follow-up questionnaire. In effect, this questionnaire would put the question: "We trained Cpl Jones for five weeks with the object of making him a junior NCO. Did we succeed? If not, where did we fail?" The ex-students themselves can also be asked to give their opinion, if necessary on a form, but far better in an informal discussion. They would be asked: "You have now been a NCO for two months. Did the Course (a) fit you for the duties you have had to perform? (b) not fit you for these duties? If not, where did the course fail?"

The wise Commandant or chief instructor will always have personal contact with the person to whom he is responsible for the course, with the units he is serving and with his ex-students. Otherwise he may live in a fool's paradise, running a course that teaches everything except what is wanted.

29

When the object of a course is clarified, or its weaknesses in failing to achieve the object are exposed, the chief instructor is in the position of the class instructor preparing a lesson. He must review the ingredients of the syllabus and decide the relative importance of their contribution towards achieving the object. In fact, MUST, SHOULD and COULD KNOW once again. The next step is to balance the time available and the receptive ability of the students against his MUST, SHOULD and COULD KNOW scale.



There is always a temptation to allot the time available in exact proportion to the importance of the ingredients. A simple example might be as under :—

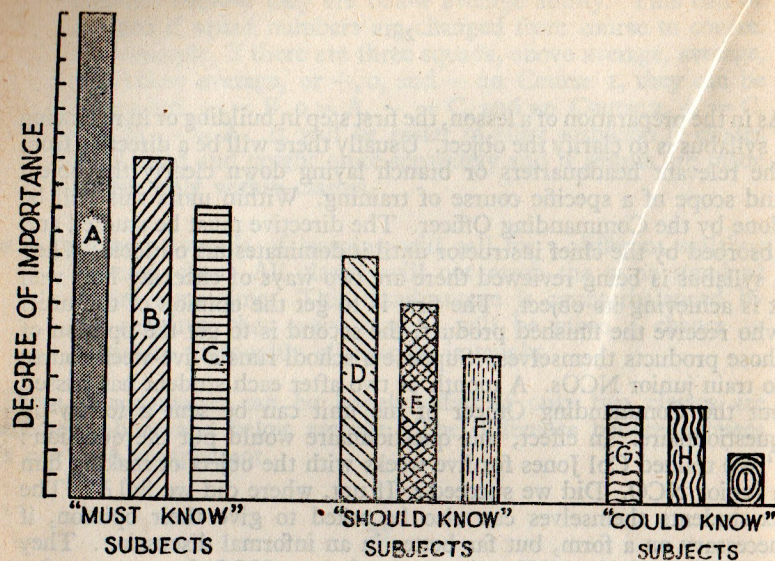


FIGURE 31

Each block represents a subject shown in its relative importance to achieving the object of the course. If the time available was 40 hours, many people would be inclined to allot it like this :—

A	10	
B	7	
C	6	
		23
D	5	
E	4	
F	3	
		35
G	2	
H	2	
I	1	
		40

This is an unreliable method. It is generally better to decide first how long it would take to teach A, B and C. Suppose the answer is 32 hours. There are only eight hours remaining, all of which are necessary to teach D. The chief instructor must then make his position clear to higher authority. Either he can teach only A, B, C and D in the time allotted, or, if he is granted an extra 12 hours, he can teach

all the subjects he considers necessary fully to achieve the object. These figures can only, of course, be tested and modified by experience. The first method will probably result in a smattering of everything and proficiency in nothing, the second ensures that the important subjects at least will be properly mastered. The difference in approach can be summarized thus :—

FIRST METHOD : How long can I give them to learn so-and-so ?

SECOND METHOD : How long will it take them to learn so-and-so ?

When it is vital to train large numbers of men at a high speed it is especially important that the second method be ruthlessly applied.

30

It is not always easy to analyse the contribution of each subject towards achieving the object. In Part 1, for instance, it was stated that the development of character should be an additional object of any period of training, and, in such training as that of instructors and leaders, the development of character is the most important contributory factor towards achieving the object. In these circumstances it may be advisable for the chief instructor to clear his own mind by analysing the contribution of each part of his block syllabus towards the training of character. Let us go back to the earlier example of the course designed to produce junior NCOs. Here is an imaginary extract from the block syllabus :—

### EXTRACT FROM BLOCK SYLLABUS

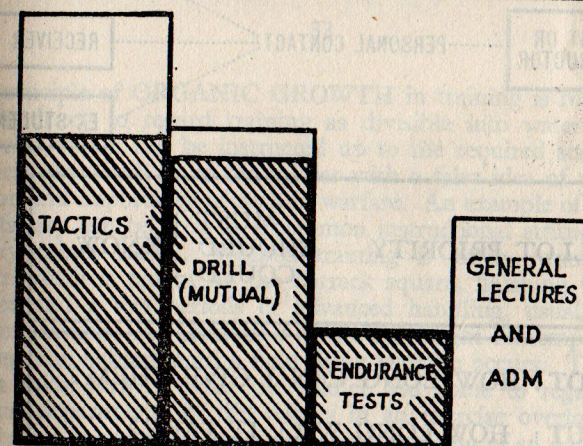


FIGURE 32

The shaded portion represents approximately the balance of character training against the pure teaching value of the periods concerned. In tactics, where both W and S qualities are exercised, the percentage

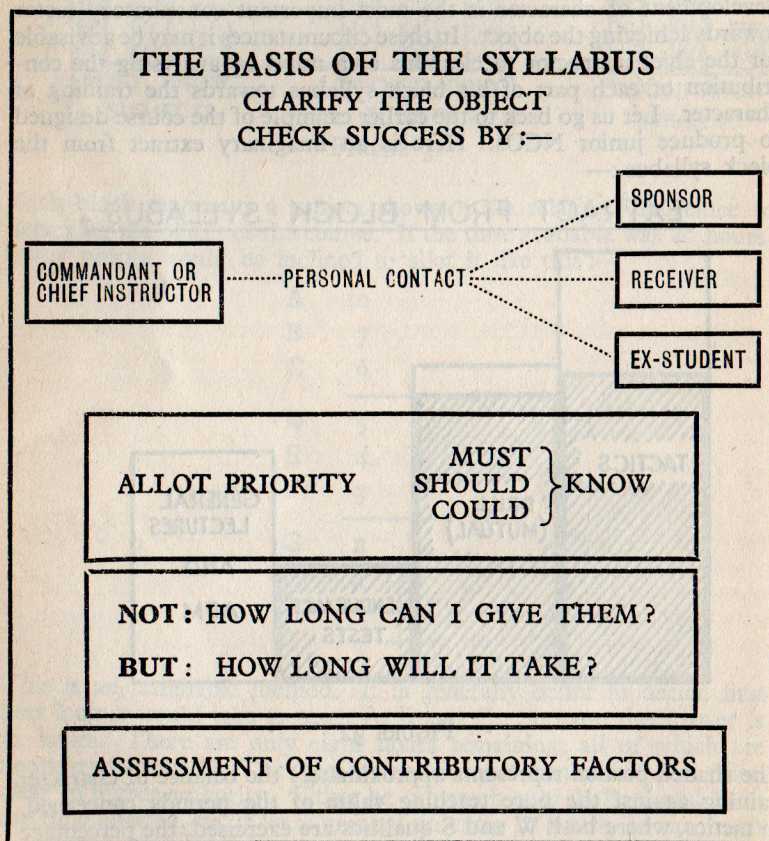


is high, in mutual drill it is even higher, in endurance training it is 100 per cent., and in general lectures and administration it is nil. A glance at the syllabus will show the chief instructor how much character training his course includes; if he wishes to increase it, he can alter some of the methods used. The general lectures, for instance, might be given by the students themselves as described in Chapter 3, or the class might organize and carry out the inspections and administrative periods themselves, thus increasing the contribution of these periods to character training.

By a similar method, any factor, such as the amount of practice in shooting, the amount of observation training, or the amount of practice in individual command can be assessed separately in each block and its total approximately gauged at a glance. It is worth noting, incidentally, that the plainest way of showing a block syllabus is in fact pictorially in blocks.

31

## SUMMARY



## ORGANIC GROWTH

32

In ancient Greece the highest athletic honours were reserved for the winner of the Decathlon. This contest was made up of ten separate events, some running, some jumping, some throwing. An "athlete" was not a specialist who could run fast or jump high, or who could train himself as a sprinter one year and a javelin thrower the next; he was a man with a good performance over all branches of athletics AT THE SAME TIME.

Similarly, when a soldier reaches the peak of his training he must be proficient in all branches of his job at the same time. We have seen that, to be successful, training must be progressive, but it must not be the progress of the rolling stone, a mere passage from one piece of learning to the next; it must be the progress of the snowball, a journey which agglomerates learning in an ever-increasing mass.

33

The principle of ORGANIC GROWTH in training is fundamental. Any tendency to regard training as divisible into watertight compartments which can be instructed up to the required standard and then left alone will leave the soldier with a false idea of the relative position and importance of each in warfare. An example of the watertight fallacy can be seen in a common instructional attitude towards infantry minor tactics. Weapon training is often regarded as a subject which is taught on the barrack square, finishing with range practice and a few periods of advanced handling, usually without live ammunition. Fieldcraft and tactics are taught contemporaneously as a separate subject until a field firing exercise occurs. The sudden violent union between what the soldier had come to regard as two different departments of life results in an exercise overloaded with gross errors, the weapon handling especially being of an *ad hoc* nature and showing little relation to what he had learnt on the barrack square. Weapon training, as much as fieldcraft, is an integral part of minor tactics. It is often true that they cannot be taught together from the start, but as soon as two basic steps have been perfected in isolation, they should be practised in combination. Suppose, for instance,



that a soldier has learnt the rifle up to Lesson 8 and has fired his range courses. The next step might well be :—

PERIOD 1. FIELD CRAFT : CRAWLING WITH THE RIFLE.

PERIOD 2. RIFLE LESSON 10\*, FIRING POSITIONS.

PERIOD 3. LIVE AMMUNITION EXERCISE: TO TEACH:—

- SPOTTING TARGETS.
- ● CRAWLING INTO POSITION.
- ● FIRING AND
- ● WITHDRAWING.

Or, to go back a stage further, the basic movements of crawling might have been first taught in the gym as a part of PT. Practice by progressive stages would eventually fit him for a test on the assault course in battle order.

34

The principle of organic growth is applicable to almost any technique. Suppose, for example, that a ten-day cadre was arranged to improve the standard of patrolling of trained soldiers. Assuming certain basic knowledge, the main factors of the technique of patrolling might be drawn up as under :—

1. FIELD CRAFT (DAY) REVISION.
2. SILENT NIGHT MOVEMENT.
3. DIRECTION FINDING (Map Reading revision, etc.).
4. WEAPON TRAINING. USE OF WEAPONS BY NIGHT.
5. FORMATIONS AND CONTROL.
6. DRILLS FOR ATTACK, WITHDRAWAL, AMBUSH, ETC.
7. ADMINISTRATION AND ORGANIZATION OF PATROLS.

The various factors could then each be brought to perfection by isolated study and practice. After each had had its own testing exercise, there would be a comprehensive exercise which would graft the new learning on to the mass of learning already assimilated.

\*Ref. pamphlet Rifle, 1946 (Provisional).

	FIELD CRAFT (DAY)	NIGHT MOVEMENT	DIRECTION FINDING	NIGHT WEAPON TRAINING	FORMATIONS AND CONTROL	DRILLS	ADM AND ORGANIZATION
TEACH TEST	X X						
TEACH TEST		X X					
EXERCISE							
TEACH TEST			X X				
EXERCISE							
TEACH TEST				X X			
EXERCISE							
TEACH TEST					X X		
EXERCISE							
TEACH TEST						X X	
EXERCISE							
TEACH TEST							X X
FINAL COMPREHENSIVE EXERCISE							

FIGURE 33



The later exercises need not lay great stress on all of the elementary factors, but none should ever be allowed to drop entirely out of the running. Sometimes it may be necessary, or even advisable, to teach several of the factors contemporaneously: for instance, in the example above, Direction Finding and Fieldcraft might have been taught in alternate periods. The same principle, however, would still apply: First, proficiency in isolation, then graft the new learning onto the old.

35

## SUMMARY

### ORGANIC GROWTH

- Training should be designed to grow up as a coherent whole.
- ● Subjects can first be taught in isolation, and then incorporated in an exercise which relates them to the mass of learning already assimilated.

## PRESENTING THE PROGRAMME

36

If men are to be made to want to learn, the atmosphere surrounding the whole subject of training must be interesting and attractive. The weekly training programme is one of the many little ways in which that atmosphere can be influenced. Look at this extract from an imaginary training programme :—

Date	Period	Subject	Place	Dress	Taken by	Tpt	Amn	Remarks
30	1	Squad 1.T16	BL	MO	Pl Comd	2 15 cwt	300-303	Warn 207
		" 2.WT14	CL	MO	WT Staff	—	—	Fd Regt
		" 3.TE17	LH3	CF	Coy Comd	—	—	—
	2	" 2.D6	CL	CF	CSM	—	—	—
		" 3.T15	LH3	CF	Coy Comd	—	—	—
	3	" 2.T16	BL	MO	Pl Comd	2 15 cwt	300-303	Warn 207
		" 3.WT13	Fi	MO	WT Staff	—	—	Fd Regt
	4	" 1.D6	CL	MO	CSM	—	—	—
		" 3.WT14	CL	MO	WT Staff	—	—	—
	5	" 1.WT14	CL	MO	WT Staff	—	—	—
		" 3.D6	CL	CF	CSM	—	—	—

And compare it with this :—

TUESDAY MAY 30

### SQUAD ONE

From	To	Subject	Place	Dress
0830	1100	GUN CREWS IN ACTION (LMG advanced handling, field firing exercise)	BARNHILL	MUSKETRY ORDER
1100	1130	BREAK		
1130	1210	YOUR TURN NOW (Mutual drill practice)	COMPANY LINES	CLEAN FATIGUE
1220	1300	THE STEN GUN (Weapon Training SAT, Vol I, Pamphlet 21, Sec 2, Lesson 1)	COMPANY LINES	MUSKETRY ORDER

The first type of layout may be admirable for office use, but the weekly programme pinned on the board should be designed for students, not the staff. The first example is almost impossible to decipher, repulsive to look at, and cluttered with information of little value to the student. The second is clear, attractively laid out, and there is no unnecessary detail.

To summarize : in presenting the programme,

### THINK OF THE CONSUMER.

## STANDARDIZATION

37

The chief instructor who is faced with the task of training large numbers of men in a short time will often be tempted to standardize training in order to increase efficiency. Standardization may take any form of mass production. One of these, the wheel method, is described in Chapter 3, Sections 35-36 ; here is a brief description of two other methods.

- THE CONVEYOR BELT.—Instead of each class having a class instructor who teaches them everything except a few specialized subjects, there is a specialist instructor for each lesson or set of lessons. As soon as the class has received lesson 1 from instructor A, they pass on to receive lesson 2 from instructor B. Here is an example of five lessons on the same subject taught by the conveyor belt system.



## CONVEYOR BELT SYSTEM

Period	Lesson 1 Instructor A	Lesson 2 Instructor B	Lesson 3 Instructor C	Lesson 4 Instructor D	Lesson 5 Instructor E
1	CLASS X				
2	CLASS Y	CLASS X			
3	CLASS Z	CLASS Y	CLASS X		
4		CLASS Z	CLASS Y	CLASS X	
5			CLASS Z	CLASS Y	CLASS X
6				CLASS Z	CLASS Y
7					CLASS Z

FIGURE 33A

This system has the advantage that each instructor has the chance to become expert in instructing four or five individual lessons, and hence his performance should gain greatly in efficiency. The great disadvantage of the system, however, is the impossibility of any one instructor getting to know the class. The influence of the instructor is greatly diminished, and there is no real leader round which the group structure of the class can form. A further disadvantage is that the instructor is soon likely to get stale. The system should be adopted with reluctance only when the necessity of teaching knowledge outweighs the importance of forming a sound class-instructor relationship.

- ● **STANDARD LESSONS.**—Each item of training can be standardized down to the smallest detail of lesson content, lesson plan, place of parade, stores, etc. This amounts to the chief instructor or his staff doing all the class instructor's preparation for him. Again, although apparently time can be saved and efficiency increased by this system, in practice it will be found that by taking all initiative from the junior instructor his enthusiasm and keenness will to a large extent be destroyed. No matter how inferior it may appear on paper, the instructor's OWN lesson delivered well in his OWN way will usually be more effective than a standard lesson delivered without conviction. Standard lessons will sometimes, however, pay a good dividend when time is pressing and when instructors are badly trained.

## LIMITING FACTORS

38

To the practical chief instructor, the foregoing sections must have seemed a catalogue of counsels of perfection. He might well say that granted the importance of the principles explained, there is a great deal of difference between pointing out ideal methods of training and putting them into practice. The weekly grapple with the training programme must have destroyed many illusions. The art of filling those serried rows of little squares is conditioned not so much by considerations of tempo, fatigue, inhibition, or reinforcement, as by how many trucks are available on Tuesday, which instructors will be on leave, when the field-firing range can be borrowed from the gunners, and whether or not the Messing Officer has enough bread for five days of haversack rations.

Compromise is inevitable; the chief instructor must make the best of a series of bad jobs. The principles of learning themselves can be self-contradictory. Sometimes to ensure tempo will be more important than to avoid fatigue; sometimes variety will be impossible without a little inhibition. But even in the most practical of difficulties, science, in the shape of an analytical approach and an elementary knowledge of statistics, will come to the instructor's aid.

The programme can be reviewed for its most stringently limiting factors. Perhaps shortage of transport cripples the tactical training, perhaps two more instructors would reduce classes to more teachable proportions, perhaps a new lecture room would open new possibilities of elasticity in programme arrangement. Whatever the problem, the instructor can gather solid data to support any suggested improvement. One way of doing this is to give each day to different members of every class a time-analysis form. The student records the exact amount of time spent in learning, moving from one place of learning to another, and in idleness. A fair sample of these forms, when consolidated and averaged, will often expose the times written on the training programme as a hollow mockery. Other ways of analysing training are explained in Chapter 4. No one is impressed by vague suggestions for improvement, but a concrete case with facts and figures to support it will always receive fair consideration. Suppose a school put in a request for more transport, which was refused pending a fuller statement of reasons. Here are two possible replies. If you were in the position of the higher authority making the decision, which of the two letters would bear the most weight with you?



## EXAMPLE ONE

*Subject : Additional Transport*

1. Ref MX/4/392 dated 5 Nov, it is noted that no additional tpt will be granted unless further reasons for its necessity can be given.
2. Additional tpt would be definitely beneficial to trg in the following ways :—
  - (a) It would save time in trg and hence allow longer hours on instruction.
  - (b) It would allow a whole company to be transported at a time and hence make the training programme easier to draw up and more effective.
  - (c) More vehicles would be available for D & M instruction which would therefore benefit considerably.

## EXAMPLE TWO

*Subject : Additional Transport*

1. Ref MX/4/392 dated 5 Nov, it is noted that no additional tpt will be granted unless further reasons for its necessity can be given.
2. By increasing the establishment of this school by four 3-tonners the following advantages would accrue :—
  - (a) By substituting MT for bicycles in certain exercises, an average of 23 minutes per working day could be saved. Over the whole course of 60 working days, this would total 23 hours or four extra working days.
  - (b) At present, out of seven company exercises, four have to be carried out on a shuttle tpt system. These exercises would gain approximately 40 per cent in efficiency, and an average of four-and-a-half unproductive student-hours would be eliminated per exercise.
  - (c) At the moment there are only seven vehicles available for 84 D & M students. This is in contradiction to the Training Directive dated 18/6/45 which lays down that classes will never be larger than 10 men. The suggested increase would cut the size of squads from 12 to 8 men.

39

## SUMMARY

### LIMITING FACTORS

An elementary knowledge of analysis and statistics will prove invaluable in diagnosing and eliminating the factors that limit the success of training.

## CHAPTER

# Mediums of Instruction

## INTRODUCTION

I

Military instruction is concerned with a wide variety of subjects which range from the theory of electricity to cooking potatoes. The chief instructor must scrutinize each subject and decide through what medium (lecture, demonstration, lesson, exercise, etc) it can best be taught in all its stages. One general line of sequence is lecture—demonstration—exercise, comparable to the sequence of explanation—demonstration—practice within the lesson. Sometimes the subject will be taught through a medium which is traditional, such as the well-known demonstration of Company Orders, the lecture on VD by the MO and the discussion period allotted weekly to ABCA. However that may be, it is often advisable to stand back and view each piece of instruction afresh, for an independent assessment will often hit on a new and more effective medium.

2

Since most instruction is designed to train men to DO things, it is generally true to say that the best medium is that which presents learning in its most practical form, that is the form which approaches most nearly the active service application of that learning. Conversely, the worst medium is the one furthest removed from the practical application of the learning, and this is most frequently the spoken word, unaided by any eye-learning or practical exercise. The early steps of instruction will often, of course, demand classroom lessons, but even these can be related to their ultimate practical use. Note, for example, the difference between these two ways of setting the same problem for mortar detachment commanders :—



## ● BLACKBOARD

Point C is the target. Range from OP is 2,650 yds. Strong wind blowing from X. How much correction would you allow?

## ●● CLOTH MODEL

The enemy are in that house. Your OP is in this wood. There is a strong wind blowing up the valley. Give your fire order.

If the first factor in choosing the medium is that instruction must be practical, the second in importance, and it is complementary to it, is that the **MAXIMUM SENSE APPEAL** should be used. This rule was fully explained in Part 1, Chapter 2, Sections 11 to 20. By the application of these two rules the ideal medium can always be found, but it cannot always be used. Additional practical factors such as the time available, the number of instructors, the supply of equipment, limit the chief instructor's choices. It is up to him whether he submits to the inevitability of these hostile factors, or whether he does his utmost to minimize their effect.

At the bottom of the scale stands the lecture; at the top, the practical exercise. Between the two there are many mediums from which to choose, each with its own peculiar advantages and disadvantages. This chapter will review the scope of some of the more common mediums of instruction and throw out some practical hints for their execution.

### PREVIEW—CHAPTER 3

	<i>Sections</i>
<b>THE LECTURE</b> .. .. .	<b>3-10</b>
<b>THE DISCUSSION</b> .. .. .	<b>11-12</b>
<b>THE PLAYLET</b> .. .. .	<b>13-15</b>
<b>THE DEMONSTRATION</b> .. .. .	<b>16-19</b>
<b>TACTICAL TRAINING</b> .. .. .	<b>20-29</b>
<b>THE FILM</b> .. .. .	<b>30-32</b>
<b>THE LESSON</b> .. .. .	<b>33-34</b>
<b>MASS PRODUCTION</b> .. .. .	<b>35-36</b>
<b>CHARACTER TRAINING</b> .. .. .	<b>37-44</b>
<b>SOME BRIGHT IDEAS</b> .. .. .	<b>45-47</b>

# THE LECTURE

3

## DEFINITION

The lecture is a method of instruction which depends primarily upon speech and illustration to achieve its effect without any major form of practice by the class. Lectures can be broadly classified into two types; those calculated to produce a certain attitude of mind, and those designed to impart knowledge. The first are called **MOTIVATION** lectures, the second **FACTUAL** lectures. A lecture lasting less than 20 minutes is called a *lecturette*.

The Commanding Officer's address to his unit, the RSM's talk on discipline, the opening or closing address to a course, the Brigadier's order of the day given as a talk to officers before action, the introductory lectures to big abstract subjects such as morale and leadership, the platoon commander's pep-talk—all these are calculated to leave the audience in a certain frame of mind, or to motivate them in a definite direction. So far we have used the word **MOTIVATE** with the sole sense of making a man want to learn, but, as can be seen from the examples above, motivation may take the form of wanting to be efficient, obedient, industrious, loyal, courageous, dutiful or merely to be more punctual in returning from leave. Since the motivation lecture is more a technique of leadership than a method of instruction, there is little to say about it here. The two types of lecture often overlap, as in the instruction of man-management and discipline in the field. Although these periods teach a certain amount of knowledge, they have an important motivating function as well. Therefore, the instructor who gives such lectures must be carefully selected, for not only must he be a good teacher, but also an inspiring and experienced leader.

4

The lecture proper, or factual lecture, embraces an enormous field. In the past, it has been the most popular medium for the treatment of subjects ranging from tactics, strategy, organization and administration to care of the feet and oral hygiene.

## ADVANTAGES

- So long as he can be seen and heard, one instructor can handle a class of several hundred men.
- A vast amount of ground can be covered in a short time.
- There is no elaborate equipment required.



- All the preparation can be done by one instructor. When he
- has given the lecture once or twice, virtually no preparation is necessary.

### DISADVANTAGES

- Knowledge imparted by talking is not easily memorable.
- Saturation is almost inevitable.
- The contribution of the lecture towards character building is negligible.

5

It will be seen that the advantages of the lecture benefit the instructor ; the disadvantages penalize the class. The old form of lecture, an unadulterated monologue lasting some 60 minutes, violates nearly every rule of good instruction. There is no participation by the class, no drama, no variety. They suffer from saturation, and usually from boredom, which is the opposite of motivation. Figures can prove that after a period of 60 minutes of pure talking, only a fraction of the class will remember more than could have been stated emphatically in 10. Even when the lecture is cut to 30 minutes of well-planned talking generously interlarded with visual aids, dramatic devices, and bouts of questioning, these considerations still weigh heavily against it. Therefore, the first deduction we can draw is that, whenever possible, the factual lecture should be avoided.

6

There are many ways in which this can be done. Here are some of them :—

### MORE PRACTICAL METHODS

Many lectures on Supply, Movement and Tactics are better given on the cloth model. Instruction gains a great deal by adding an extra dimension to the chart or blackboard diagram. Movement can be related to a scale of distance. Cloth models can also be used to instruct organization in the field. The de luxe model has electric signs denoting each HQ and unit which can be illuminated and moved at will, but even the poor man's makeshift squares of cardboard on a 6-ft table are still a better method of instruction than the straight lecture with the family-tree chart. Live troops on the ground are the best demonstration of the organization of sub-units.

### PLAYLETS

Not only subjects which lend themselves to dramatization, such as the teaching of court martial procedure or the conduct of an ABCA discussion, but general introductory lectures on strategy, tactics and mechanical theory can be taught by playlet using the simple device of introducing on the stage someone representing a pupil to whom everything has to be explained. See PLAYLETS, Sections 13 to 15.

### SWEAT-AND-TEST

This method is suitable for subjects which can only be learnt by rote, such as range table, detailed establishments, etc. See Part 1, Chapter 5, Section 16. A variation of this method is the tutorial period in which the class learn in their own way, while the instructor is available for consultation.

### BRAINS TRUSTS

If the student requires a background to a subject, a carefully controlled brains trust can often replace the standard general-interest lecture. It is especially useful in providing a pot-pourri of personal experiences of battle. The student will gain the advantage of many different opinions instead of that of the lecturer alone. Similarly, if a class is due for foreign service, a brains trust made up of officers who have served in the country to which they are going will give them a broader picture of the national habits and customs than they could have acquired from a single lecture. The brains trust must, however, be good. Unless the personalities involved arrest and hold attention, unless they talk with a degree of brilliance, the period will not arouse the extra degree of interest which is its main virtue over the lecture.

### QUESTION AND—ANSWER

This technique may be used at intervals during a lecture, or it may be possible to teach a whole lesson by this process of reasoning. It is only useful where the student can be led along the path of understanding; it has no value in instructing a mass of fortuitous facts. See Part 1, Chapter 5, Sections 11 to 14.

### DISCUSSION

A discussion can be substituted for a lecture when the subject is controversial and can be humanized, ie :—

- What preparations would you make before going out on a recce patrol by night ?
- Adequate housing is more essential than increased exports.

These are both good subjects for a discussion because they are related to the student's personal life. He may have to live in a house, he will have to go on patrol, at least in training.



But these :—

- Discuss the principles of carburation.
- Discuss the operation of the working parts of the LMG.

—are both bad subjects because they are too academic and abstruse. There is, in fact, nothing to discuss. The subject is either known or not known. See Sections 11 and 12 of this chapter.

### MUTUAL LECTURES

This method can only replace the lecture when the class consists of NCOs or officers. In these circumstances, however, it is of such value that it will be worth while to discuss it in detail.

7

The system of instruction by mutual lecturing can be applied to any subject. The class are given one or two periods in which to prepare the subject, either individually or in syndicates of three, and then certain students are selected to deliver the lecture to the remainder of the class. The latter may be split into three or four squads to allow a greater number of students to deliver their lecture, but, since supervision is essential, this entails an instructor for each squad. Alternatively, the subject may be split into three or four sections, and although each student is required to prepare the whole, the lecturer is changed at the end of each section. Or, again, both of these variations may be adopted, in which case, out of a class of thirty, twelve or fifteen students would deliver part of each lecture.

The mutual lecture needs careful handling. First of all, the students must be of a standard to give their lecture or lecturette with confidence and success. Since the speakers must be selected on a roster system, the standard of the weakest students will decide whether or not the method is practicable. Secondly, the students must prepare the lesson up to a very high standard, complete with training aids and lesson plan. This will take time. Thirdly, the lecture or lecturette must be carefully supervised. When it has been given it can be criticized and discussed by the class, but the instructor must correct any misapprehension and give his own final summary. The pros and cons of this method may be summarized :—

### ADVANTAGES

- Since teaching is a form of participation that makes learning stick, those that have delivered the lecture will remember the subject. Preparation itself will teach the subject. Therefore, the subject is certain to be well learnt.
- Both the character qualities of W and S are developed.
- The students have a gratuitous lesson in the technique of instruction.

- There is high class activity and good reasons for high motivation.

### DISADVANTAGES

- The time spent will be at least three times that of a straight lecture on the same subject.
- If the class is split, extra instructors will be needed.
- If a student performs very badly, the instructor may have to recapitulate the whole of that section of the lecture himself.

This time the advantages are all to the student, the disadvantages to the instructor.

8

There are few subjects which cannot be taught better by some method other than the lecture, but, because of the practical advantages of mass instruction, of saving time, and of comparatively easy preparation, the lecture must often, to a greater or lesser extent, be tolerated as a common feature of the training programme. If, therefore, the instructor is forced to the reluctant conclusion that he cannot avoid the lecture, the next step is to decide how he can make the best of it. The answer can be found by following the precepts laid down in Part I of this pamphlet, by introducing drama, surprise and variety, by stimulating class activity in the form of quizzes and questions, by teaching through the eye by means of copious visual aids, in short by making the period as little like the old-fashioned monologue as possible. And it should be short. A man of average intelligence cannot assimilate the spoken word for more than 40-45 minutes. Even this modest period must be broken up in spells of not more than 8-10 minutes of continuous talking. The break may only be a few visual aids, a bout of test questions or a summary, but it must be there to prevent the black-out of saturation. The well-designed lecture may be compared to a multi-decker sandwich. The stodge of didactic talk is made more palatable (and digestible) by alternating layers of visual and dramatic instruction.

9

It is not possible to catalogue what material should be included in a lecture ; it is easy to state what should not. Skills are taboo. The principles underlying techniques can be expounded, illustrated, and the relevant factors neatly weighed. They should then be left severely alone until the more practical stages of instruction are reached. Thus in teaching tactics, the principles of attack can well be explained in a lecture, but any detailed study of their application is fruitless. Black-board tactics, the teaching of drills excepted, should stop short at the broadest generalization. In teaching technical subjects, too, there is always a temptation to steal the jam from future instruction. Time is



often wasted by trying to describe in the lecture room what the student will learn more easily and quickly when he starts to practise. The instructor should confine himself to subjects which can adequately be taught by speech, gesture and diagram ; he should not trespass into subjects which can only be taught by more active methods.

10

Finally, it must be remembered that the standard of intelligence of the class affects the choice of the lecture as a medium. With a dull, difficult class the lecture is a period of passive resistance ; with a bright, well-motivated class most of its disadvantages disappear. Hence, although the lecture, in that it is a form of cramming, is still a bad method, the staff officer can be crammed in a way that would choke the private soldier.

## THE DISCUSSION

11

### DEFINITION

The discussion is a method of examining a subject through the opinions expressed in a loose form of debate. A chairman guides the course of the discussion, confirms or refutes opinions expressed, draws conclusions and summarizes the points made.

### ADVANTAGES

- The discussion makes a considerable contribution towards character development.
- Compared with other forms of instruction, the amount of preparation demanded of the instructor is small.
- Class activity is high ;  
Interest is easily stimulated.

### DISADVANTAGES

- A certain amount of the time spent will have little or no instructional value.
- It is beyond the powers of many otherwise efficient instructors to hold the chair successfully in a discussion.

12

## PRACTICAL POINTS

The choice of subjects for discussion is limited. The subject must not be too impersonal or academic. It would be hard, for instance, to stimulate a good discussion on map reading or military law. If, on the other hand, the subject is one on which the class feel very strongly (such as a discussion on unit messing in a sub-unit where the food has been the subject of bitter complaint) the students will express opinions based on emotion rather than reason. The subject should be interesting, controversial without being inflammable, and of direct importance to the personal life of the student. Discussions on such subjects as politics or discipline are possible, but they need expert handling.

The discussion should be conducted in such a way as to give it a thread of continuity. Like other forms of instruction, however, it must be divided into phases with a good summary at the end of each.

Suppose the subject of the discussion were the planning of a commando-type raid on an enemy-held island. To give the period continuity and, at the same time, to divide it into phases, the discussion might be cast in the form of an appreciation, like this :—

- Phase 1.** What do you want to do ?  
*ie*, kill all the enemy, destroy equipment, hold the island, take prisoners, etc.  
(Summary Phase 1.)
- Phase 2.** What do you expect in the way of enemy defences ?  
(Summary Phase 2.)
- Phase 3.** What equipment and troops have you available ?  
(Summary Phase 3.)
- Phase 4.** What other factors govern your plan ?  
(Summary Phase 4.)
- Phase 5.** What is your plan ?  
(SCHOOL SOLUTION as summary to PHASE 5.)

### Final Summary.

If the discussion had opened with each student expounding rival plans, there would have been no generally accepted basis on which to build any conclusion. By reaching a series of definite decisions, however, the ultimate plan can be shown to be good or bad in the light of what has gone before.

A discussion will nearly always benefit from a period of specific preparation by the students.



- The following diagram shown to a class before a discussion has a salutary effect :

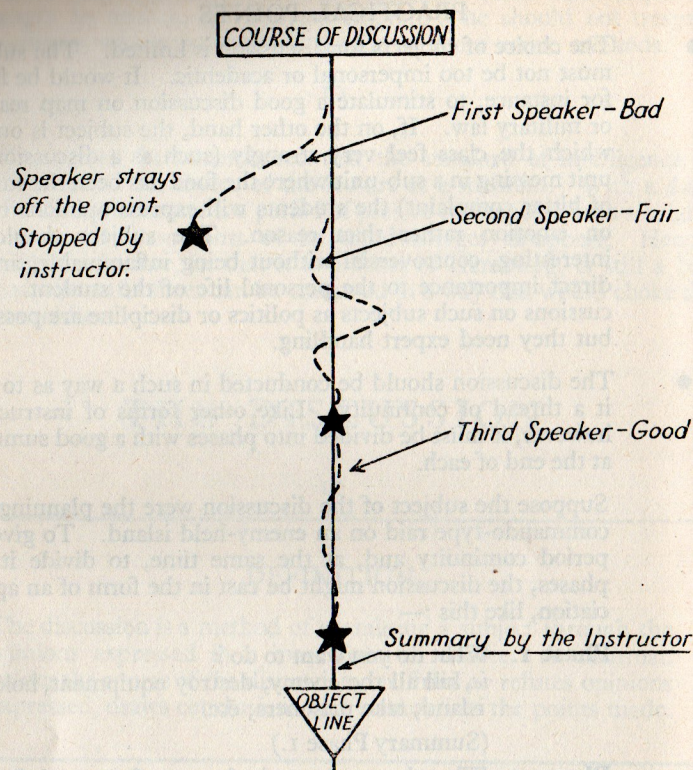


FIGURE 34

- Discussion will flow more freely in an informal atmosphere. Students should be allowed to group themselves as they like, to smoke, and to sit in comfortable chairs. A speaker should not be announced thus :—  
“Question 1. The first speaker is Serjeant Jones. Carry on Serjeant.”  
But rather like this :—  
“Now this is an interesting subject. Some people think . . . . (the instructor then puts forward some controversial opinion). . . . Do you agree with that point of view. . . . Serjeant Jones ?”
- A roster can be kept to prevent a few pushful characters from dominating the discussion at the expense of the more retiring members, who, when pressed, can often give contributions of unexpected value.

## THE PLAYLET

13

### DEFINITION

The playlet is a method of presenting instruction through the words and actions of players on a stage. It may be used as a two-minute illustration of a single item, or it may form a period of instruction complete in itself.

### ADVANTAGES

- The playlet is a medium by which interest is easily aroused.
- Since it teaches both visually and aurally it is an excellent method for the preliminary instruction of techniques which can be learnt by imitation, such as the demeanour of an officer taking company orders, of a soldier reporting a message, etc.
- It can be performed to large classes.
- It can create a pleasant atmosphere which will sweeten up a tired or a disgruntled class. If the parts are played by instructors, it will often improve the relations between the staff and the students, since, in seeing the instructor in a novel role, a new and often more human side of his personality is revealed.

### DISADVANTAGES

- The production of a playlet requires much time and effort, also a producer and actors with a modicum of dramatic talent.
- The dramatic or humorous aspects of a playlet are likely to be remembered clearly at the expense of the lessons which it sets out to teach.

14

### PRACTICAL HINTS

- In designing the playlet, the lessons it sets out to teach must be given priority, and the temptation to be funny or to produce drama for its own sake must be sternly resisted. The hilarious wrong-way demonstration, which comes under the definition of a playlet, often teaches nothing at all. See Section 18.



•• Quite straightforward lessons can be taught as a playlet if there is someone representing a pupil on the stage. He may be in the character of a civilian visitor to whom some military operation is being explained, or he may be a war correspondent, a visiting officer, etc. Whatever his other characteristics, he must be stupid, so that he learns at a slower speed than that of the tail-end of the class. This gives him an opportunity for raising all the questions that might arise in the minds of the class.

•• In most playlets there should be a controlling personality on the stage who can regulate the tempo to suit the class's speed of assimilation, who can keep contact with the audience, and who can punch home the lessons by summary. This person can be a compère, who breaks in as he thinks fit, or he can be the questioning pupil on the stage who can be brighter or more stupid as his sense of audience dictates. He can round on the class with a question in the music-hall tradition, and, to provide a summary, he can painstakingly recapitulate what he has learnt.

•• The playlet must have a climax. It is probably best for the playlet to end before the final summary, but however that may be, it must not just go on until it is finished and then stop. The ordinary lesson starts with a preview, and pursues its orderly way to an expected conclusion; the course of the playlet should be an enigma, full of incidental surprises, building up to a dénouement in the last few lines.

•• Much time can be saved by good casting. The best methods are:—

- To write a playlet to suit the personalities available, whose abilities and limitations are well known.
- To search over a large sample of students either for personalities who can play the part in their own character without having to act, or to find natural actors. Trained actors should be selected with discrimination, firstly because they know so much that they are often bad for stage discipline, and secondly, because one professional amongst a set of natural actors tends to appear a "stage soldier."

••• Over-acting a part is worse than playing it woodenly, and it is more common.

••• The producer need not be appalled by his task, nor need he be versed in the technicalities of play production. He can, however, at least make all the players speak slowly and distinctly, allow attention to focus on the important player, make everyone appear natural, and be **FIRM AT ALL TIMES.**

• A playlet cannot be evolved efficiently by a committee; the rehearsals must be controlled by one person alone, the producer. Good discipline and team loyalty to the producer will save hours of conflict over sporadic bright ideas.

•• The producer can play a part himself or he can produce from off the stage. Since he will often have been the author as well, it will save time if he takes the controlling part and carries the playlet on his shoulders. If, however, he aims at a high standard of production, it will be more easily achieved from off the stage.

•• As a rule it is a waste of time trying to produce a playlet on a West-End scale. The stage may be in the Garrison theatre, or it may be two six-foot tables, the back of a 3-tonner or the corner of a field. Wherever it may be, the producer should make his props and setting as simple as possible, and concentrate on the players. Battle noise off, in the form of live ammunition, can often be easily arranged and achieve a great effect.

•• The conduct of the rehearsal can be reduced to a drill.

- ONE Short talk by producer to explain the object and method of presenting the playlet.
- TWO Allot parts and describe the characters to be represented. Read through script in parts.

#### NEXT DAY

- THREE Check players and props. Divide playlet in three to five minute sections.
- FOUR Rehearse each section until it runs smoothly.
- FIVE Rehearse complete playlet.

•• Soldiers have great difficulty in learning parts verbatim. It is often quicker to write the script in note form and to allow the player to put each speech into his own words. The cues must be written in full. When there is a controlling player, as described earlier, the parts can be written in two columns as question and answer. The following is an example from a playlet introducing the subject of patrolling to a class of NCOs:—



## EXTRACT FROM PLAYLET

### "INFORMATION PLEASE"

#### SCENE 2

COMPERE. (In front of Drop.) SUMMARY SCENE 1.

CUE: "... And now our War Correspondent is in conference with the Bn Comd *finding out about PATROLS.*"

(CURTAIN)

WC

CO

YOU DON'T MIND IF I ASK  
YOU A FEW QUESTIONS?

GO AHEAD.

HOW WILL YOU FIND OUT  
THE DEPTH OF THE RIVER  
AND THE OTHER DETAILS  
REQUIRED?

SEND MY PIONEER PL  
COMD.

BY HIMSELF?

NO. (EXPLAIN NEED FOR  
PROTECTION AND  
AMOUNT REQUIRED.)

AND YOU WILL SEND  
ANOTHER OFFICER TO  
RECCE TANK GOING?

NO, TANK REGT WILL  
SUPPLY REPS. (EXPLAIN  
WHO THEY WILL BE AND  
HOW MANY.)

WITH HIS OWN PROTEC-  
TION?

NO, WE ARE RESPONSIBLE  
FOR PROTECTION AND  
NAVIGATION.

AND YET ONE MORE PATROL  
TO RECCE ENEMY POSI-  
TIONS?

ONE? DOZENS. MINE  
RECCE (2 PNRS+PROTEC-  
TION). ROUTE RECCES  
(1 OFFR+PROTECTION).  
RECCES OF ENEMY POSNS  
(3 MEN) LYING UP BE-  
HIND ENEMY LINES TO  
STUDY HABITS.

### PLUS PROTECTION PARTY?

NO.

### WHY NOT?

AVOID DETECTION. (EN-  
LARGE ON DUTIES OF  
PURE RECCE PATROL

1. SEE WITHOUT BEING  
SEEN.
2. GET INFORMATION  
ABOUT GROUND.
3. GET INFORMATION  
ABOUT OWN TPS.
4. GET INFORMATION  
ABOUT ENEMY.)

## THE DEMONSTRATION

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### DEFINITION

The demonstration is a method of instructing a subject by showing it to the class in a life-size representation. In that the playlet often represents a subject as larger than life, the demonstration can be distinguished from it. The demonstration may last for any length of time.

### ADVANTAGES

- Seeing is believing, and often it is understanding as well. To show the class the actual thing or the actual bodies carrying out the actual function you are teaching is the next best thing to doing it themselves.
- Demonstrations arouse interest easily.
- Large classes can be handled.

### DISADVANTAGES

- The preparation of a good demonstration takes time and trouble.
- Men can only watch one thing at a time. Demonstrations entailing large bodies of troops cannot be assimilated in detail at a single performance.
- There can be little or no contact between the instructor and class while the demonstration is actually taking place.



## PRACTICAL HINTS

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● The most common fault in the production of demonstrations is that **TOO MUCH** goes on at once. We have all experienced the large-scale demonstration in which the whole arena is dotted with bustling figures while a harassed commentator tries to keep pace with the action. This fault can be avoided by showing parts of the demonstration in isolation and later giving the complete performance. In demonstrating the Infantry Platoon in Attack, for instance, the following stages will be necessary :—

- ONE Fire section area. Coming under fire and subsequent action.
- TWO Platoon commander recce area. Warning order. Orders to section commanders.
- THREE F Gp area. Action on hearing fire. Receipt of warning order. Move to assembly area.
- FOUR Assault group. Move from assembly area to assaulting positions.
- FIVE Supporting fire group. Move into position. Covering fire.
- SIX Assault and in-fighting on the objective.
- SEVEN Reorganization.
- EIGHT Bird's-eye view of complete attack.

●● Even although there may be only one thing happening, another common fault is that it happens **TOO FAST**. One stage is not properly assimilated before the next bout of rapid action claims attention. This can be avoided by carrying out the demonstration first by numbers. Each individual action can then be studied in isolation, and, if necessary, repeated before the next action is presented.

●● A third common fault is that the demonstration often goes on **TOO LONG**. This is especially true of demonstrations of skills. There are two possible objects of this class of demonstration, a motivating demonstration to show the student what the whole skill looks like when it is carried out by an expert (eg, a demonstration of foot drill by a trained squad), or a teaching demonstration to show the student how to carry out the drill himself (eg, the demonstration given by the instructor in a weapon training lesson). The first type may be of any length, but the second must be broken up into tiny stages. A man learns a skill by **DOING**. The demon-

stration is to show him how to **DO RIGHT**. His brain can only carry a few visual images at a time, so the amount of action given him to practise must be small. The man learns nothing from the demonstration itself; he learns by **IMITATING** the instructor. This elementary fact is widely misunderstood.

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● A demonstration which sets out to show the right way of doing a thing must be perfect in **EVERY DETAIL**. Thus a demonstration of fire control can be spoiled by bad fieldcraft. Two men with bad haircuts can detract from a demonstration of mine-laying. The demonstrators are playing the parts of expert soldiers. Whatever they do must be done as an expert soldier would do it.

●● The wrong-way demonstration is better as a presentation of real life than as a larger-than-life comedy playlet. The hilarious wrong-way demonstration which is so well known, may have its value as a sweetener-up of the class and as a spoonful of jam for the actors, but the producer should be under no illusions: the knock-about farce **TEACHES** little or nothing. The actions presented in the wrong-way demonstration should be near enough to normal practice to make them appear natural, so that when the instructor points out the mistakes their revelation comes as a surprise. The attitude of the audience should not be :—

“It's the best thing I've ever seen off the stage! Look at Capt Peterson's moustache!” (Loud and prolonged laughter.)

But :—

“Good Lord. I might easily have done that myself.” (Mental note not to do it.)

●● Small touches of showmanship pay a high dividend. Notices directing the audience to the stands, white tape marking the stands themselves, and similar such little out-of-the-way surprises will impress corporals as much as generals, probably more. And if the audience is impressed before the demonstration starts, a build-up has been achieved that will ensure anticipation, which is prospective interest.

●● An amplifier is useful for handling big audiences because :—

- ONE Everyone will hear.
- TWO The big booming voice speaks with divine authority. No one connects the voice with any particular personality.



BUT—

- ONE A good public speaker loses much of his personality. Microphone technique is an art in itself.
- TWO Be prepared for technical hitches. For an important demonstration it is advisable to have two independent amplifying systems.
- THREE Stand out of sight of the audience unless you have a lapel microphone. Nothing is more difficult than trying to speak into the mike, to watch the audience, and to keep an eye on the demonstration, all at the same time.

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An example of the staging and presentation of a small demonstration was given in Part I, Chapter 3, Section 18, and principles of slickness and stage management stated there have general application. None of the machinery, no whistle-blowing or flag-flapping should be evident. The demonstration should start, run its course and stop as if by magic. The following drill can be used in rehearsing a large demonstration:—

- ONE Decide the object, scope and method of presentation of the demonstration.
- TWO Find a suitable area and stand. The latter is most important at this early stage. Make sure that every member of the audience will be able to see every part of the arena and every bit of action.
- THREE Peg out the significant points in the area.
- FOUR Call an "O" group of your demonstration squad to the arena. Explain the demonstration and walk round the pegs.
- FIVE Rehearse the demonstration in short phases.
- SIX Rehearse the whole demonstration with two or three independent critics watching it from the stand.
- SEVEN Run through verbally the signal cues and responses after the rehearsal and again before the performance.

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## TACTICAL TRAINING

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### DEFINITION

Tactical training is instruction in the art of fighting given to those elements of the army whose war job entails immediate contact with the enemy.

Tactical training is such a wide subject, embracing in its instruction so many different mediums, that to study each separate medium in the same degree of detail as the others described in this chapter would call for a pamphlet in itself. Of all the qualities required by the good tactician, the greatest is common sense. The instructor should bear this in mind throughout all training; he should always coach the student towards the commonsense solution of any problem rather than the academic or unpractical solution which may fit in with a theoretical lesson just learnt. The ideal solution will, of course, be both the best common-sense plan and also a practical exemplification of the newly-learnt lesson.

Before going any further, perhaps it would be wise to dispose of the fallacy that there is no correct solution to a tactical problem, but that any man's opinion if held sufficiently doggedly, is pretty well as good as the next. Since there is such a large element of chance in any tactical operation, it is never possible to say that one solution will CERTAINLY succeed when another would CERTAINLY fail, but it is possible to say that some chances are 100-1 against where others are odds on. Sometimes there is a best solution, always there are one or two solutions which are better than any other.

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### MODELS, CLOTH MODELS, SAND TABLES, ETC.

#### ADVANTAGES

- This medium can be used in any weather.
- Cloth models are generally the best initial method of teaching the principles of tactics and their application to ground in the broadest possible sense. Relief, cover, obstacles, etc., can only be approximately represented, hence the higher level of tactics is more suited to this medium than minor tactics.
- Certain techniques can be demonstrated and practised, such as appreciations, orders, giving and receiving verbal messages, etc. In order to obtain the maximum value from

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this practice, all bodies should be represented and should ACT their parts.

- A class of 100-150 can be handled with comparative ease.
- With large scale equipment the class can be even bigger.
- In problem-and-answer cloth model exercises every student can be exercised in the same role at the same time, eg, Platoon Commander, GSOI, Battery Captain, etc.

### DISADVANTAGES

- Minor tactics cannot be studied down to the detailed problems of the use of cover and the siting of weapons.
- Considerations of weather and topography are decided for the students by the instructor. Distances and time are taught on a false scale. With such data ready-on-the-peg, many students can produce glib solutions to a cloth model problem. Only when exercised on the ground and faced with the problems of assessing these factors in their true proportions do they understand the real difficulties of appreciating a situation.

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### PRACTICAL POINTS

- There is no reason to regard the cloth model as specifically designed for the problem-and-answer method of instruction. It can be called in as a three-dimensional visual aid to almost ANY type of tactical instruction, such as lectures, discussions, playlets, demonstrations of giving orders, post-mortems to exercises, etc.
- The problem-and-answer exercise on the cloth model often gains in interest and realism from an imaginative treatment. The narrative can be told in the tense atmosphere of the ghost-story seance, and battle noises can be represented by effects off-stage. For example :—

INSTRUCTOR : (*Casually.*) As the platoon reaches the bridge, suddenly . . . (*burst of automatic fire on a gas rattle*) . . . (*with great urgency*) machine gun fire coming from that wood! What would you do ? . . . Smith ?

OR : (*Slowly in a whisper.*) You crawl cautiously up to here (*points*) to the road . . . and stop to listen . . . (*noises off of approaching footsteps.*) (*Quickly and tensely.*) That's an enemy sentry . . . in

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twenty seconds he'll be within a yard of you . . . you can see him looming against the skyline now . . . (*footsteps louder*) . . . he's about on you . . . he's coming . . . he's reached you NOW. What would you do ? . . . Jones ?

JONES :

Shoot him, Sir.  
(*Sound of shot off, followed by a scream from the sentry, and the crackle of SA fire.*)

INSTRUCTOR : You see. Your shot roused the whole enemy post. What would you have done . . . Brown ?

The problem-and-answer cloth model exercise should not be a go-as-you-please discussion, but firmly controlled, with the rules of sequence, summaries, questioning and testing applied as in a lecture or lesson.

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## TACTICAL EXERCISES WITHOUT TROOPS

### ADVANTAGES

The TEWT is generally the best method of teaching the detailed application of tactical principles to the ground before the stage of the practical exercise is reached.

As in model exercises, every student can be practised in any one role at the same time (*ie*, platoon commander, battery captain).

As in model exercises, certain techniques can be practised, such as the issue of orders, etc. In addition, the technique of appreciating ground can be taught.

Classes being small, the contact between class and instructor is good.

### DISADVANTAGES

TEsWT have little teaching value in bad weather.

Classes being small, the TEWT is expensive in instructors.

TEsWT do not teach the time factor in tactics, nor do they take count of unforeseen practical difficulties. Objectives are taken more quickly and easily without troops than with them.

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## PRACTICAL POINTS

- The problems set in TEsWT should relate to GROUND. The TEWT gives the student the best opportunity he will ever get to study ground without other considerations to distract his attention. Questions such as these:—

“Who would you expect to be in the commander’s “O” group?”

“What bridge-building materials would you expect to find in this dump?”

—can be answered as well in the classroom as outdoors. If it is essential that the student should have this knowledge in mind while considering a further problem, a quiz can be set before leaving camp for the exercise area.

- Snap TEsWT (a succession of quick appreciations of variations of the same problem) are an excellent way of teaching an important point. For instance, a three-hour TEWT might well be set for a class being instructed in platoon leadership in which each problem is the same—Give out your orders for attack. Thus, by moving fast from stand to stand, six or more different variations of platoon attack could be studied in one morning and the students exercised in two of the vital techniques of platoon leading—appreciations and issue of orders. In that sharply contrasting solutions can be demanded by each successive problem, this exercise is an excellent remedy for the drill-bound student who tends to apply a few stereotyped plans to any situation.

- There should be a sufficient number of different stands to ensure variety, but they should be close enough together to avoid undue waste of time. The stand should always be on the scene of action. It is a common mistake to stand on top of a hill and discuss a problem which the students are considering from the viewpoint of a commander fighting in the valley below.

- The class should approach the ground from the side of their own troops in the narrative, otherwise they will have an unjustified knowledge of the enemy terrain. Ground should be INTERESTING. It may be essential to carry out field-firing exercises in sand-dunes, but a TEWT can be held anywhere and will gain value from an attractive setting.

- The TEWT can be used in any combination with the demonstration and live exercise, *eg*, a leg of an exercise can be carried out as a TEWT first and then a certain solution fought out with real troops. Or a demonstration body of

troops can carry out some manoeuvre and, at a certain critical stage, freeze. The student can be asked what he would do and, after a short TEWT, the troops can carry on to show what would happen if his solution were adopted. These exercises are not, however, strictly Tactical Exercises WITHOUT Troops.



A small skeleton enemy, firing live ammunition, can add greatly to the realism of TEsWT. Situations can then be depicted by SOUND and ACTION instead of by word of mouth.

## DRILLS

## ADVANTAGES

- Drills are an excellent method of teaching basic tactical strokes by demonstration and participation.
- Tactical drills have many of the advantages of parade-ground drills in building group morale.

## DISADVANTAGES

- Although the value of drills is great in teaching basic strokes, the danger of the student being led to apply these too rigidly is equally great.
- Drills of general application teach no practical technique; they are merely an action-precis of a number of abstract principles.

## PRACTICAL POINTS

- It is a mistake to teach a practical operation through drills followed by exercises on the ground in which those drills can be meticulously applied. Students will easily become obsessed by the idea that all tactical problems can be solved by a formula. They must realize that the drill is not a magic ritual which, with slight variations, can be superimposed on any piece of ground, but that each tactical situation must be treated on its own merits in the light of the principles learnt from the drills. A series of snap-TEsWT is an excellent way of freeing students' minds from the domination of the drill.



●● It is often advisable to carry out a difficult exercise (*eg*, the first battery-cum-battalion field-firing exercise, or the first complete company exercise) first as a drill. The ensuing exercise will then be in no danger of becoming such a welter of confusion as to obliterate all sense of progress and achievement.

●● Almost any tactical operation can be reduced to a drill, and the valuable technique of a drill-rehearsal for an important operation in battle should be understood and practised.

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### EXERCISES

● There is little value in assessing the advantages and disadvantages of the exercise as a method of instruction. It is the inevitable culminating step in training men for war. Exercises can be divided into two clearly defined, though often overlapping, types; TEACHING exercises and TESTING exercises. The first is designed to instruct under the best possible learning conditions, the second is designed to test what has been learnt under the conditions of war.

●● In TEACHING exercises, all the principles of learning and teaching discussed elsewhere in this pamphlet apply with equal force as in other mediums of instruction. The instructor's attitude is that of friend and coach. Before a student issues his orders he will stroll up to him and say: "What's your plan, Brown?" When Brown has told him, he will elicit by question and answer the factors behind Brown's appreciation, he will unobtrusively draw Brown's attention to some weak links in his chain of reasoning, or will help Brown to the realization of some important factor he has overlooked. And when Brown's orders are given out, it may be quite a different plan, and a much better one. The exercise will be designed to punch home one or two MUST KNOW lessons, and perhaps to include some COULD KNOW items as well, and it may have to be repeated again and again before they are properly learnt. The legs will be short and easy. There will be critiques and summaries. Finally, for TEACHING exercises, learning conditions must be good, for tactics, like other subjects, cannot easily be TAUGHT to cold or miserable students.

●● The TESTING exercise is conducted in quite a different manner. The student will learn from it, it is true, but the learning will be from experience, in the way that he will learn later in battle. Realism and tempo are vital considerations; the exercise must strive to create the illusion of warfare. The instructor's attitude is now entirely

different; he is an umpire, quick to help by painting the picture of the battle, but in other ways stern, judicial, aloof. The student is thrown into the whirlpool to sink or swim; he must use his brains, his common sense and his initiative to fight the battle out. Unexpected situations will arise, set-piece plans will go wrong, and unlike his experience in the teaching exercise where he was allowed to start again and do it right, he will have to get out of the jam as best he can. He may be hungry, cold, bored or dead-tired, but there is no question of calling the exercise off. And bad weather is not a drawback, it is a positive advantage.

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### PRACTICAL POINTS

● One of the factors vital to the success of tactical training is a generous supply of live ammunition. The use of live ammunition is often limited by considerations of safety. It is, of course, essential that in training no unnecessary risks should be run, but the instructor should strain every nerve to ensure that his tactical training is not stultified by unnecessary safety precautions. A certain degree of risk must be taken to insure against the greater risk of sending badly trained men into battle. An example of too little safety was the practice of inoculating students to SA fire by shooting machine guns over them as they crawled with only 2 ft of clearance. This resulted in several unnecessary casualties. An example of too much safety is that of a unit which forbids all night firing on fixed lines because of an unlucky accident in one isolated exercise. This will result in even more unnecessary casualties in battle. If ground vital to the success of your tactical training does not fulfil all the requirements of a field-firing range and yet your common sense tells you that the risk of field-firing as it is, is negligible, submit your case to higher authority for sympathetic consideration. Very often a compromise can be reached.

●● Science shows that proficiency acquired in one technique is not transferable to a similar technique except in its identical factors. That is to say that skill gained by training in observation by Kim's game or by memorizing the numbers on passing cars is not transferable to observation on the battlefield. Proficiency in battlefield observation can only be achieved by practise in battlefield observation, and this is a very easy technique to practise in almost any tactical exercise, or to teach in isolation. Perhaps one of the best ways of teaching observation is to put the student or class in the centre of an arena in which various battlefield incidents are arranged to take place over any period of from half-an-hour



to two days. The incidents can be reported by telephones as they occur, or they can be marked down in a log. This exercise is quite common as a TEST, but it is not sufficiently used as a TEACHING method, that is, with an instructor present to point out the best ways of searching, identifying, watching and reporting.

The value of inoculating inexperienced troops to battle noises has been proved in practice. The students should first be placed as close as safety allows to the point of impact of shells, bombs and SA fire. Greater value can be gained from this exercise, as it can also from an assault course and certain testing exercises, if it is given an impressive and rather frightening build-up. The surprise and relief when the exercise is found to be quite tolerable leads to a certain degree of contempt for danger and hardship.

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The technique of location of fire can only be taught by practice. If enemy weapons are obtainable, they should be employed to fire live ammunition over students in exercises. It does not matter whether or not they are obsolete so long as the features by which they can be recognized are different from those of British weapons. Situations calling for location of enemy fire can easily be introduced into any exercise in a field-firing area. Under more restricted conditions, blank ammunition fired through an oily barrel is the best substitute.

The post-mortem after a TESTING exercise is usually made a set-piece period, complete with charts and models. The critique between the legs of a teaching exercise, although bound to be to a certain extent impromptu, will also gain in value if it is carried through with method and efficiency. The following drill can be adapted to most occasions.

- ONE      LEG ENDS. (Students fall out. Senior instructor confers with all instructors and arranges form of critique.)  
(Students gather round.)
- TWO      SENIOR INSTRUCTOR'S CRITIQUE.  
The object of that leg was to teach.....  
What we did right.....  
What we did wrong.....  
What we should have done was.....
- THREE   MINOR POINTS FROM JUNIOR INSTRUCTORS.
- FOUR     STUDENT COMMANDERS' POINTS OF VIEW.

- FIVE      DISCUSSION AND QUESTIONS.
- SIX       SENIOR INSTRUCTOR SINGLES OUT A FEW INDIVIDUALS AND SUB-UNITS FOR PRAISE OR (IF UNAVOIDABLE) SUB-UNITS FOR BLAME.
- SEVEN    SENIOR INSTRUCTOR—BRIEF SUMMARY.

The whole critique should not usually last more than 10 or 15 minutes. A squad blackboard is often useful; the summary can be prepared while the senior instructor is speaking.

The principle of organic growth is most important in tactical training. At no time should a slovenly standard be tolerated in such minor subjects as wireless procedure or weapon training. The larger testing exercises can be designed to include almost every item of a man's previous learning, from cooking in the field and field hygiene to the administration of discipline and the care and cleaning of weapons.

The important technique of umpiring TESTING exercises is fully described in MTP No. 61.

## THE FILM

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### DEFINITION

Films, like lectures, can be divided into two main classes; MOTIVATION films from which the student emerges in a certain state of mind, and FACTUAL films from which he learns knowledge.

Two examples of motivation films are "The New Lot" and "The Way Ahead." These reconcile the recruit to the condition of army life and make him more receptive to training. Similarly, a class that has seen the film "Next of Kin" will show better motivation in a subsequent lecture on security than one which has not. This type of film is a coherent work of art which can achieve its full effect by a normal showing in the way of an entertainment film.

Factual films range from those that introduce technique, such as "Officers and Men" for the technique of man-management, "The Tactical Handling of the 3-in. Mortar" for tactics, and "The Technique of Instruction" for teaching, to films of technical detail, such as the series on the internal combustion engine or the gunnery films that teach the mechanism of the field pieces. If this type of film is shown in the way of an entertainment film, the following considerations must be borne in mind:—

### ADVANTAGES

- No instructor is required.



- No preparation is necessary.
- The film is a contrast to most other forms of training and it is therefore useful as a way of introducing variety.

### DISADVANTAGES

- Students associate films with entertainment. The usual reaction on entering the cinema is : "Thank Goodness. Now I can relax. No questions to answer, no need to worry, no need to concentrate." It is safe to say that no efforts of the camera-man or the producer can counteract the effects of 40 minutes of unbroken warmth and rest in the middle of a hard day of mental and physical activity.
- Owing to the principles of saturation, very little will be assimilated.
- There is no opportunity for class activity.

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In Chapter 1, Sections 14-15 the success of a method of showing a factual film by sequences was contrasted with the failure of the film to achieve its object when shown without interruption. Even if a film of more than 20 minutes running time is shown twice with a discussion between each showing, the disadvantages listed in the last section will still tell heavily against it. The prospect of the discussion is too vague and distant to stimulate the class to any real effort. The standard of assimilation will vary with the tempo and density of the factual instruction in the film, and with the skill with which it has been made, but it is safe to say that a concentrated teaching film shown twice in bulk will not often achieve more than 20-30 per cent assimilation. The method of showing the film by sequences must be carefully considered and adapted to each individual film. Here, however, is a drill that will suit most cases :—

### PREPARATION

- ONE Careful preview by the instructor, splitting the film into sequences of not less than 2-3 minutes and not more than 10 minutes. Selection of two or three main lessons from each sequence. Coaching of operator in his duties. Preparation of questions and verbal comments. For a 30-minute film the preparation will take at least one-and-three-quarter hours.

### PERFORMANCE

- TWO Statement of the object of the whole period to the class.
- THREE Verbal preview of the first sequence followed by two or three questions dictated to the class, covering the main

lessons of the sequence. The class to be warned that answers will be expected from them at the end of the sequence.

EXAMPLE.—Before a 5-minute sequence in the film "Officers and Men," depicting some examples of unofficerly conduct and poor man-management, the class are asked :—  
"At the end of this sequence I want you to tell me :—

- What is the most unofficerly act this officer commits.
- Which man is treated most unfairly by this officer."

- FOUR The first sequence shown in the normal fashion.
- FIVE The class give the answers to the questions. A discussion is stimulated ; the instructor keeps the ball rolling but lays down no personal opinion or school solution.
- SIX The same sequence is shown again. This time the instructor breaks into the sound-track of the film and, at certain important points, gives the commentary himself through a tannoy or amplifier. The school solution to the questions, with explanation, is given while the situation is being enacted. The operator can cut the volume or fade out the sound-track by signal. The instructor should be out of sight of the class whilst giving this commentary.
- SEVEN A summary, verbal or visual, of the first sequence is given.
- EIGHT Each subsequent sequence is given in the same way.

The pros and cons of this method may be summarized :—

### ADVANTAGES

- The student is mentally on tiptoe through the first showing to find the answer to the questions, and through the second to see whether or not his answers were correct.
- Instead of the lesson being given by an impersonal commentator in whom the student has no personal interest, it is given by his own instructor, on whose opinion he is more likely to rely.
- Each lesson is driven home as it is being enacted on the screen.
- The considered summary of the instructor strikes home with firm conviction after the usually inadequate student discussion.
- The lessons are thoroughly assimilated.



## DISADVANTAGES

- Only 15 minutes of running time of a film can be shown in a 40-minute period.
- A good instructor is essential.
- The work of preparation is exacting.

It is not necessary to treat all films in this manner. If, however, it is important that the lessons should be thoroughly assimilated, this is the method by which it can be achieved. Nor need the object of the period be the same as the object of the film. For instance, an out-of-date training film, "Platoon in the Attack," has been used for an indoor umpiring exercise. The technique described above was employed, the questions taking the form of:—

"If you were the umpire with No. 6 Section, what action would you take?"

Similarly, some of the sequences of instructors giving lessons in the film "The Technique of Instruction in the Army" can be used as exercises in assessment. The questions can take the form of an order to fill in the assessment form, and the instructor's commentary can give the school solution.

32

The film, as a medium of instruction, is worthy of a better place in training than a wet-day stop-gap. We have seen its advantages and its limitations when used as a method of instruction in itself, but there is no reason why it should be left on its pedestal of self-sufficiency. Military training films, however, are not designed to be used as a sole means of instruction, but are intended to be used as an aid to instruction. The instructor should therefore use it as an animated visual and an aural aid of incalculable value to help him in his everyday instruction. Here are some of its uses:—

- **THE FILM LOOP.** Complicated technical or drill movements can be run in constant repetition on a film loop until the class, by concentrating on one feature at a time, have mastered the several and distinct processes at work, first in isolation, and then as a complete function. This is an excellent method of teaching the working of the four-stroke engine, the gear box, the working parts of a weapon, etc, and is a useful introduction to gun-drills and foot-drill.
- **THE FILM FLASH.** These are animated visual and aural aids which can be used to illustrate any type of classroom instruction. An example can be given from the lecture on "Tank-Infantry Co-operation" the lecturer's script of which is quoted in Chapter 5, Section 10. The instructor has to explain the somewhat confusing terms—hull-down and turret-down. This he does by showing a 3-minute live and

diagrammatic sequence from the film "The Single Tank" which illustrates these terms beyond the possibility of confusion.

Or again, the film flash can be used to create an atmosphere, or to motivate, as in the example used in the introductory lecture on Artillery given to Infantry NCOs and officers:—

The class is plunged into darkness at the beginning of the period. Without a word of introduction the excellent four-minute sequence of the night barrage before Alamein is shown from the film "Desert Victory", ending on the line: "The Infantry reached their objectives, the barrage had done its work." The lights go up, the lecturer picks up his cue: "The barrage had done its work.—Gentlemen, the Royal Artillery is the Infantryman's greatest friend. . . ." The class is in the right frame of mind.

The film, if properly applied, can be one of the most comprehensive and adaptable aids to instruction. To gain full value from training films the instructor must be aware of their possibilities and make the fullest use of the material that is available.

## THE LESSON

33

### DEFINITION

The "Lesson" is a method of instruction in which the instructor teaches a class of not more than 10 men by any combination of explanation, demonstration and practice. The normal duration of a lesson is from 30 to 50 minutes.

### ADVANTAGES

- There is close contact between the instructor and the class. Each man can be given individual attention.
- Since practice is possible, skills and techniques as well as knowledge can be taught by the Lesson method.

### DISADVANTAGES

- Classes being small, the Lesson is expensive in instructors.
- More than in any other method of instruction the value of the Lesson depends entirely on the quality of the instructor.

34

The Lesson method covers a wide field; some techniques and all skills can best and, often can only, be taught by some form of this method. The size of the class and the amount of the apparatus are, with the quality of the instructor, the most important factors. The



method is at its worst with ten men, one piece of apparatus and one instructor; it is at its best in the coach-and-pupil form, one man, one piece of apparatus and one instructor. The Lesson method was exhaustively discussed over the whole of Part 1 and, since it is the basic stroke of instructional technique, there is little left to higher authority but to provide adequate equipment (see Chapter 5) and to train the junior instructors up to the highest possible standard (see Section 42).

## MASS PRODUCTION

35

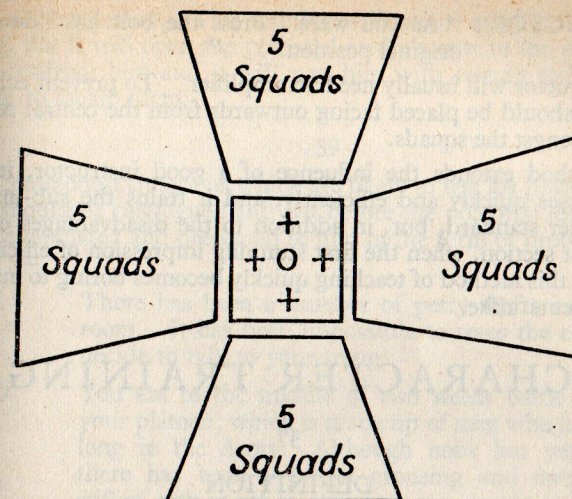
### DEFINITION

Mass production is any wholesale method of training large numbers of men by a few highly skilled instructors. It sacrifices the personal contact between instructor and class for greater speed and efficiency in learning.

Mass production is not a system which falls in line with our military tradition. The British Army has always stressed the personal relationship between officer and man in service and between instructor and student in training. Mass production is directly antagonistic to this very valuable method of building up morale and group loyalty. Any tendency to treat students like cars on a production belt or sausages in a factory will give little opportunity for the formation of the important group structures, and the training of the student's character will suffer at the expense of stuffing him with knowledge. Occasions will arise, however, when the importance of training large numbers of men in a short time in elementary knowledge or skills outweighs all other considerations. Then extreme measures of standardization (see Chapter 2, Section 37) will have to be adopted. The principles of factory efficiency are far easier to put into effect than those of good individual instruction, and one single example, that of the wheel method, will suffice to show how they can be applied.

36

The wheel method (see also *The Principles of Training*, 1946, Section 9) is suitable for many forms of technical training, weapon training, and the introduction of semi-practical knowledge, such as map-reading, the use of army forms, etc. It requires one instructor who is expert at speaking and a number of sub-instructors who are adequate at demonstrating and checking faults. The instructor stands on a tower or platform in the centre (the hub of the wheel) and the squads are arranged as the spokes of the wheel. For most subjects a class of 500 can be handled comfortably. Each squad of 10 should have one sub-instructor. If the class is over 200, the sub-instructors must be demonstrators as well, if under 200, four sub-instructors can demonstrate one from each side of the tower, as under :—



+ Demonstrators (Sub-Instructors)  
O Speaker (Instructor)

FIGURE 35

Under these circumstances the sub-instructors with the classes check the faults only.

The instructor introduces the lesson, explains, summarizes, and controls the timing. On the command "Demonstrate," the sub-instructors go into action; on the command "Practise," the class. A signal drill must be evolved to allow the sub-instructors to keep in touch with the instructor.

### EXAMPLE

INSTRUCTOR: "Place the thumb and forefinger of the right hand on the knob of the bolt. Press it upwards and backwards and withdraw to its full extent. DEMONSTRATE."

(Sub-instructors demonstrate.)

INSTRUCTOR: "PRACTISE."

(Classes practise. All sub-instructors raise their right arm, signalling "Movement completed.")

INSTRUCTOR: "Press the bolt head upwards with the forefinger of the right hand. DEMONSTRATE."

(Sub-instructors demonstrate.)

INSTRUCTOR: "PRACTISE."

(Classes practise. Two sub-instructors wave their right arms above their heads signifying "Movement again.")



INSTRUCTOR: "As you were. Press the bolt head down to its original position. . . ."

The instructor will usually need an amplifier. To prevent echo effect, speakers should be placed facing outwards from the central tower and NOT amongst the squads.

This method extends the influence of a good instructor, it teaches huge classes quickly and efficiently, and it trains the sub-instructors to a higher standard, but, in addition to the disadvantages explained in the last section, when the first stunning impression of efficiency has worn off, this method of teaching quickly becomes boring to instructors and students alike.

## CHARACTER TRAINING

37

### DEFINITION

Character training is any form of instruction in which the attempt to develop character is deliberate and specific rather than implicit or incidental.

The foundations of building a soldier are laid on the drill square. There is probably no branch of military training so well appreciated or applied as drill. Generations of detailed study have evolved the techniques of the drill serjeant, and it is an instructional technique that is more generally efficient than any other. But if drill is understood better, the other aspects of character training are probably understood less than any other branch of training. Drill stops short at the W qualities. There is very little training specifically designed to promote S, and, whereas the private soldier can do his duty with considerable success lacking any great measure of S qualities, to the junior leader these qualities are quite essential. The following sections will discuss certain specific ways in which these S qualities can be fostered and encouraged.

38

Leadership has many facets, but under the surface there lie two fundamentals without which no leader can succeed. The first is the leader's understanding of human nature and his ability to apply that understanding in manipulating men in accordance with his own will. The second is his degree of confidence in his own ability and powers of judgment. These are loosely defined as man-management and self-confidence. There is a general opinion that the techniques of man-management can only be gained with experience. This is true, but there is a further implication that is implicit in this attitude that the experience can only be gained fortuitously over a term of years. This is not true, for training can be designed to give concentrated experience

over a short period. This training will not be as effective as the real thing, but it will open the potential leader's eyes to the problems that may confront him and it will arm him with certain techniques with which to tackle them.

39

The commonest situations which are likely to test his powers of leadership should be catalogued and put before the potential leader. These can be tabulated and presented to him in the form of problems such as these :—

- ONE There has been a number of petty thefts in the barrack room. It has been impossible to trace the culprit. You decide to talk to your troop.
- TWO You are in the middle of two weeks battle course with your platoon, which is made up of men who have not been long in the Army. Although none has yet fallen out, there has been a lot of grouching and swearing. The stiffest task is yet to come, so you decide to talk to your platoon.
- THREE You are in a Field Force battalion. All the men in your platoon arrived yesterday, having just completed their primary training. You decide to talk to them.
- FOUR Your platoon was playing a football match last Wednesday against a local civilian team. It was a rough game and the referee ordered one of your platoon off the field for disgraceful conduct. The remainder of the platoon team and the soldier onlookers adopted a hostile attitude to the referee. You decide to talk to your platoon about it.
- FIVE You are BSM of a battery on detachment and a friend of the local hotel keeper who is an ex-officer of the 1914-1918 war. He tells you one day that he is greatly surprised at the critical way the NCOs of the battery talk about their officers. They do not mind who is present, private soldiers or civilians. You decide to talk to the NCOs.
- SIX The MO has just given your young soldiers a VD lecture. He is not a good man and made rather a joke of the whole thing. He omitted to tell them that in the Army it is a crime to conceal, not to contract, the disease. You decide to talk to your platoon.

It is not enough for the student just to consider these problems ; man-management is a technique, and he must be practised. Students can be called out to address the class as if they were their own sub-units, and when they have finished, their performance can be discussed and criticized. More intimate situations can be set which concern the individual man, such as an interview with an inefficient NCO who is in danger of being reduced in rank, with a man who is worried by home affairs, with a man who is about to be sent on leave and is likely



to go absent, and so on. To achieve their full effect, all these scenes should be faithfully ACTED by the characters concerned.

40

Before going into action the junior leader should have no illusions that he will always be leading willing men. The seamier side of battle should be represented as well as the brighter. Situations of low morale in battle call for the highest qualities of man-management, and again the junior leader should be practised. The atmosphere of battle can usually be better created by short playlets, of which the following are skeleton examples :—

#### EXAMPLE ONE

Characters :—Platoon Commander and Pte. Clever.

Opening Situation :—Time 1700 hours. Battalion due to move off for an attack at 1900 hours. Platoon Commander sitting in the billet.

*Enter Pte. Clever.*

Clever : May I speak to you a moment, Sir ?

Platoon Commander : Yes, what is it, Clever ?

Clever : This attack, Sir, I'm afraid I can't do it.

Platoon Commander : Oh, why ?

Clever : It's my nerves, Sir, I can't stand it.

Platoon Commander : How long have you been out here ?

Clever : A month, Sir.

Platoon Commander : But you've only had one battle.

Clever : Yes, but my nerves have gone, Sir. I've always had bad nerves, Sir. I can't stand it.

#### EXAMPLE TWO

Characters :—Six private soldiers.

Opening situation :—Platoon waiting in lying-up area to join the rest of the Battalion in the line.

The North Sussex, which their Battalion has just relieved, has come back full of horror stories and is resting in an area near at hand.

*Enter Smith (who has just been gossiping with the North Sussex).*

Smith : The shelling's terrible up there. The North Sussex have lost 200 in three days.

Jones : How the hell do you know ?

Smith : I've just been talking with their MT Serjeant. They've only three officers left. The whole of one company was captured in a night raid.

Brown : Good Lord ! That had better not happen to us.

Smith : I don't know so much. On a dark night they surround you before you can do a thing.

*(The platoon commander enters, having overheard this conversation.)*

At the end of the playlet the instructor turns to the class and asks them how they would deal with the situation. After a short pause, one student is called up on to the stage and has to handle the characters as if he were on the spot.

41

The leader's self-confidence can best be gained from practice in successful leadership. Whereas the best form of practice is that directly related to the leader's job, *i.e.*, in leading a section, troop, platoon or squadron, ANY form of practice in group dominance, which is leadership, will help to build self-confidence. Thus, potential leaders should, as far as possible, be left to organize their own recreation, sport, administration and training. One establishment, which trained junior leaders, tried with success the experiment of handing over to the students the entire administration of the school, from the part of Commandant down to the lowest executive NCO for a period of 48 hours every week. Sometimes, although this arrangement bristles with practical difficulties, it is possible for senior students to instruct junior students. Thus the chief instructor should strive to give potential leaders a chance to exercise their powers of leadership in EVERYTHING, until their outlook becomes the leader's outlook, until they step forward willingly to undertake total responsibility for any task that may be assigned to them. One warning, however, is necessary. Confidence is only built with success ; the student must be asked to lead only when it is within his powers to lead well. Should he fail, his confidence will be diminished out of all proportion to the significance of his failure.

42

In the training of instructors, the importance is not always realized of developing the qualities of character which are essential to the good teacher. There is a tendency to think that the object of the course is to teach him all the KNOWLEDGE that he will require to instruct the subject, whereas we have already seen in studying the qualities of the Good Instructor that "KNOWS HIS STUFF" is only one of many essential factors. It is not too much to say that in a course which sets out to train instructors, at least half the time should be devoted to the improvement of the student's instructional attitude and manner. In a highly successful Canadian Army school to train junior instructors, out of the course's total of 60 periods, 48 were spent in practice in instruction.

43

The potential leader, no matter whether he is being trained as an instructor or for command in the field, should leave his training school well equipped for his immediate future. In Chapter 2 we saw the importance of designing the syllabus to fit the student for the very next step in his career. This is particularly important for the young



officer; unless he is practised in the appropriate techniques, when he steps into his new *métier* he will feel like a new boy at school, and much of the hard-won confidence will be lost. A careful study of his daily tasks in this critical initial period as a fully-fledged leader will allow the chief instructor to design his training so that he will step off on the right foot.

44

An example of this can be given from the training of officer cadets. A survey of the opinion of ex-students and of the officers of the depots to which the cadets were posted indicated that one of the roles in which the young officer was hopelessly at sea was in that of supervisor of weapon training. Although his knowledge of the weapons was adequate, he was called on to supervise expert instructors of many years service who naturally considered that they knew how to do their job better than any newly-fledged second-lieutenant. To fit the young officer to meet this situation a special form of mutual weapon training was devised. It was designed first of all to teach confidence in supervising, secondly to give the cadet a knowledge of the weapon training instructor's difficulties and problems, and thirdly, to revise his knowledge of the weapons.

Two squads of five cadets each prepared a separate lesson. A cadet from the first squad would then be selected to give the lesson to the second. The remaining members of the first squad would act as supervisors, watching for good and bad points, at first using an assessment form, but, later in their training, sizing up the instructor mentally.

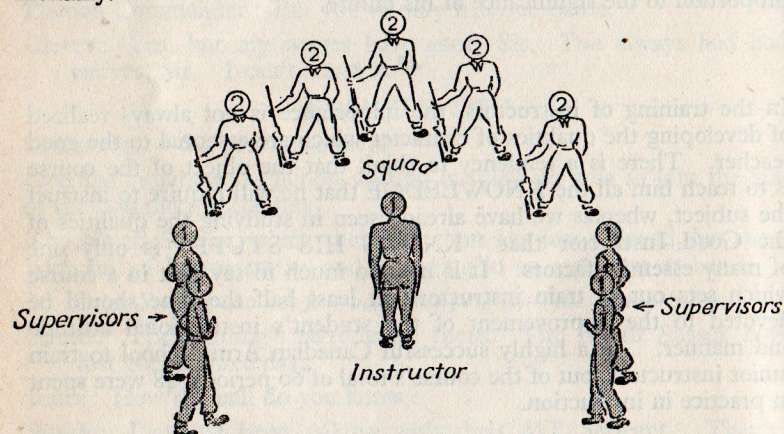


FIGURE 36

After ten minutes instruction, the officer conducting the period would stop the lesson and call on one of the supervisors to take the cadet instructor aside and speak to him as if he were his squad NCO, giving him a few words of encouragement and advice on his conduct of the lesson. This scene was ACTED as if it was really taking place,

complete with salute and "Sir" from the "Serjeant Instructor." The whole class would then discuss not only the conduct of the lesson, but the technique of the supervisor in dealing with the "instructor"—whether he had been tactful and fair, whether he had given too much blame or too little praise, and so on. Although far from perfect, this method trained the potential leaders in one of the most common and most difficult of the tasks that awaited them in their new sphere.

## SOME BRIGHT IDEAS

45

### ● TO TEACH THE SEQUENCE OF OPERATION ORDERS (ALL ARMS)

A large board 8 ft by 4 ft is split into two columns, the left hand column half as broad as the right hand. Each side has slotted grooves running into the centre; into each a black painted lath can be slid. The class are given a situation and asked what a person must be told before he can carry it out. As the class suggest different items, each one is written on one of the black laths and slid into the right-hand column of the board. When the students have nothing further to suggest, the instructor takes the laths out and sorts them into their correct operational sequence. The headings, Information, Intention, etc., are slid into the left-hand column in the appropriate place. Situations can be simple and domestic at first, military later.

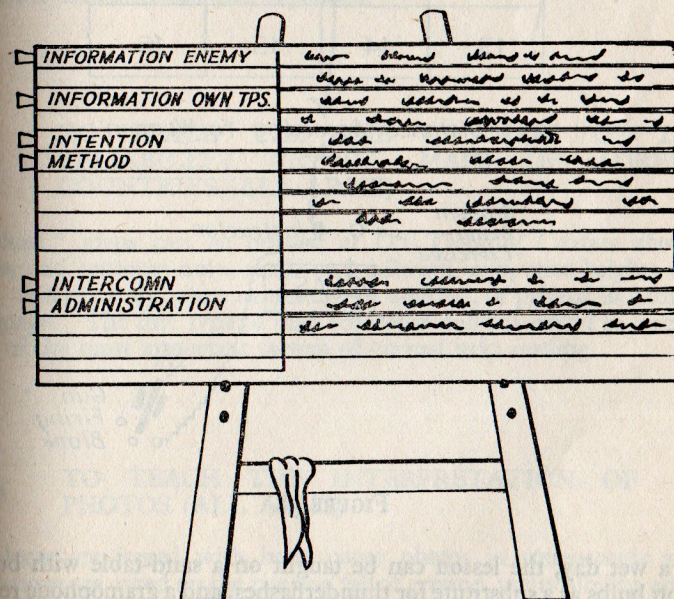


FIGURE 37



## ●● TO TEACH FIRE CONTROL BY THUNDERFLASH RANGING (RA, INFANTRY)

Telephone or wireless communication is arranged between the instructor with the student being exercised and an assistant in the target area. The instructor telephones to this central or pivot assistant who passes the order to one of a network of lesser assistants to throw a thunderflash (loaded with earth) to the exact spot required. Assistants should be invisible. By a de luxe method, the instructor from his position with the class can blow small charges of explosive in the target area, by electrical detonation. A gun, behind the students, firing blank on order from the instructor, adds realism.

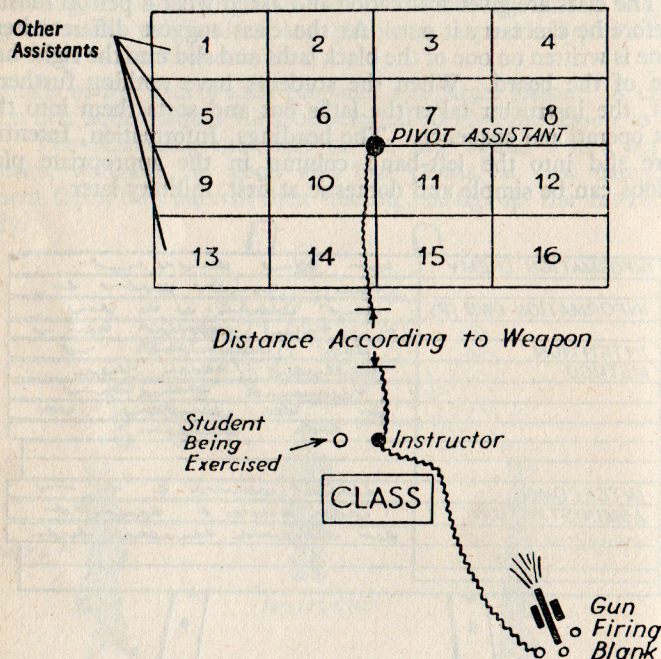


FIGURE 38

On a wet day, the lesson can be taught on a sand-table with buried 6-volt bulbs as a substitute for thunderflashes, and a gramophone record of gunfire to understudy the gun.

## ●● TO MAKE THE MOST OF TE<sub>s</sub>WT IN BAD WEATHER (ALL ARMS)

TE<sub>s</sub>WT in wet weather teach little. Sometimes, in extreme cases, it is not to make only a short visit to the ground and to set the subsequent situations of the same area from panoramic sketches or photographs shown over the epidiascope. If the weather is bad enough, this method will teach more than an outdoor TEWT, but it is never nearly as valuable as a TEWT in good weather. It is of little service in teaching minor tactics.

## ●● TO TEST KNOWLEDGE OF CONTOURS (ALL ARMS)

Give each student a wooden tray 2 ft 6 ins by 2 ft 6 ins, a bucketful of damp sand, and a small square cut from an OS 1 in. to the mile map. The student must then make a scale model in sand of the relief of the ground depicted on the map. At the end of the period an exact scale model is demonstrated and explained.

## ●● TO TEACH THE USE OF MAPS OF LOW RELIABILITY OR OF MAPS OF FOREIGN COUNTRIES (ALL ARMS)

"Ghost" maps can be printed at OS Training Centres showing rivers and contours only, roads and railways only, spot heights only, etc. Alternatively, place names can be omitted, or printed in a foreign language. The first type of map (contours only) is useful in teaching one of the most important factors of normal map reading.

## ●● TO TEACH THE INTERPRETATION OF AIR PHOTOS (ALL ARMS)

Students are issued with basic cover photos in stereoscopic pairs. Questions are asked on the rise and fall of ground, intervisibility, and on topographical detail. The photos are then compared with a large plaster model. Next day the class are flown over the area in a low-flying



aeroplane and finally they walk over it on foot. This is instruction de luxe, but even with the flight omitted, it is still an excellent method of teaching the subject.

### ● ● A SIMPLE PRACTICAL TEST OF MAP READING (ALL ARMS)

Students are given a complicated route by map reference and bearing through a number of towns and villages which have post offices. They are mounted on motor cycles and sent round the course with a card which has to be stamped with the date and time at each post office. This is a variation of the map reading point-to-point and treasure hunt, and it is very much easier to organize.

47

### ● TO MITIGATE THE BOREDOM OF LEARNING TO SEND AND RECEIVE SIGNALS (ALL ARMS)

Students can be paired off as opponents to play chess, draughts or battleships over the air, or by buzzer. A mistake in procedure in signalling any move renders that move null and void and the player misses a turn. Less intellectual students can play noughts and crosses.

### ● ● TO DESIGN A COMPREHENSIVE TESTING EXERCISE FOR ANY ACTIVE SERVICE ROLE (ALL ARMS)

It is impossible to arrange a sufficient number of large-scale exercises to test officers and other ranks whose battle role is advisory or administrative. It is, however, possible to give them a comprehensive test by setting an exercise in the course of which the student will come up against most of the problems he will encounter on active service. This "A Day in the Life of" type of exercise can be devised for anyone from a BRASCO or a GSOI to the unit cookhouse staff. The exercise should test patience and mental endurance as well as knowledge of routine duties. Thus an exercise for the unit orderly room staff might run for 48 hours during which not only the routine work of issuing returns and orders would be thoroughly tested, but, in the midst of their normal duties, the truck could break down, the rations go missing, two typewriters could become casualties, and there would be a stream of interruptions both telephonic and personal by importunate junior and brusque senior officers.

### ● ● TO TEACH ORGANIZATIONS AND ESTABLISHMENTS (ALL ARMS)

Cards can be printed with sub-units, HQ staff, weapons, equipment, etc, grouped into Happy Families. After a preliminary study of the establishment or organization by some normal method, the cards can be dealt to groups of from four to six students who play the game until they have learnt the families by heart.

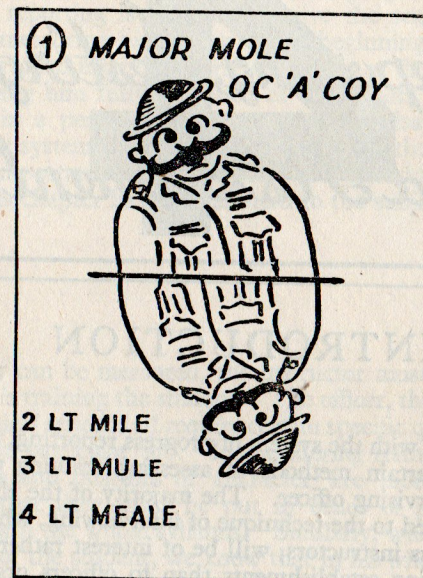


FIGURE 39

In the example above, in asking for the other members of the family the sub-unit must be named correctly. The rules for this game, however, must be adapted to suit each subject.

### ● ● TO TEACH FOREIGN BADGES OF RANK (ALL ARMS)

All instructors and staff, from commandant down to private, wear the foreign badges of rank for one week. By the end of that time students will have learnt them perfectly without any conscious effort.



We have already seen the importance of achievement and progress as aids to motivation ; we have also seen that these in themselves are not enough unless the student FEELS that he is progressing. The system of progress reporting is designed to give the student this sense of progress by measuring his ability at the beginning of the course, at frequent intervals during the course, and again at the end of the course, and by keeping him fully informed of the results. He is given this information in a personal interview with his class instructor. The success of the system depends on the quality of these interviews, and such is the importance of a good interview technique that a separate section of this chapter has been allotted to the subject.

Before ability can be measured, the instructor must consider the role for which he is training the student. The officer, the wireless operator and the technical serjeant all require certain specific qualities to fit them for their own particular job. In considering training, we know that some subjects and qualities of character are more important than others, and that they must be put in order of priority and built together to form the whole syllabus. Similarly, when considering the performance of the student, we know that in his whole range of ability some qualities are more important than others. To decide what factors are to be taken into account, and what importance is to be attached to each, is much the same process as deciding the nature and relative importance of the subjects in a training syllabus. Both are a detailed appreciation of the object of training. When we say : "Smith is a good student," we mean that, on the whole, Smith is better than other students, although his performance in some of the less important subjects may be weak. Thus, when we generalize about a student's ability, in saying he is good or bad or in allotting him a grade, we are consciously or unconsciously giving most weight to his performance in important subjects and less weight to his performance in unimportant subjects and balancing the total in our minds. If the final judgment is to be accurate, this process should be explicit.

Here is an example of the factors selected for assessment at an establishment which trained specialist NCO weapon training instructors.

## CHAPTER

# 4 *Reporting, Testing and Assessment*

## INTRODUCTION

### I

This chapter deals with the system of progress reporting, the principles of testing, and certain methods of assessing training which can be applied by a supervising officer. The majority of the chapter, except the sections devoted to the technique of interviewing, which should be studied by all class instructors, will be of interest rather to the larger schools and training establishments than to officers organizing regimental training. The system of progress reporting especially, although the underlying principles can be applied with benefit to all training, is only suited in its more extensive form to courses of a month's duration or more which cater for NCO or officer students. The examples quoted in the following sections are not of general application, nor are the subjects of reporting, testing and assessment discussed comprehensively. The object of this chapter is to indicate a certain line of approach to these subjects, giving sufficient detail to allow the enterprising chief instructor to apply the general principles to his own particular problems.

### PREVIEW—CHAPTER 4

					Sections
PROGRESS REPORTING	..	..	..	..	2-21
INTERVIEWING	..	..	..	..	22-26
TESTING	..	..	..	..	27-33
SUPERVISION AND ASSESSMENT OF TRAINING	..	..	..	..	34-38



	FACTOR	WEIGHTING
W	(Will power, sense of responsibility as defined in Part I, Chapter I, Section 12) ... ..	5 points.
S	(Self development, initiative, etc, as defined in Part I, Chapter I, Section 13) ... ..	5 points.
A	(Activity, enthusiasm, "go") ... ..	5 points.
K	(Knowledge, <i>ie</i> , about weapon training, the subject he is being trained to instruct) ... ..	5 points.
C	(Confidence in himself, and in his ability to instruct) ... ..	5 points.
I	(Instructional technique) ... ..	5 points.
TOTAL ... ..		30 points.

It will be noted that the first three factors, W, S and A, are personality or character factors; the last three factors, K, S and I, concern his learning on the course. Since character development is a very slow process, it is hardly likely that the student's W, S or A will show any significant improvement in the course of three or four weeks, yet they must be taken into consideration in assessing and reporting on a student, for without them he cannot make a satisfactory instructor. It will be noted that knowledge, pure and simple, in this example the knowledge of small arms, is only allotted five marks out of a total of 30. This puts "KNOWS HIS STUFF" in its proper perspective amongst the other attributes of the good instructor. In many forms of report this one factor bulks so large that it threatens to obliterate all others.

## 5

Here is a second example of factor-weighting taken from an OCTU course for training young officer cadets (Infantry).

	FACTOR	WEIGHTING
W	(As before) ... ..	7 points.
M	(Maturity, separated from the other S qualities by reason of its special importance in assessing young cadets) ... ..	3 points.
S	(As before, without the quality of maturity) ... ..	3 points.
A	(As before) ... ..	7 points.
K	(As before, this time all knowledge concerning junior leading) ... ..	5 points.
C	(Confidence in himself as a leader) ... ..	7 points.
L	(The technique of leadership. This factor is split from K because of its special importance to young officers) ... ..	7 points.
TOTAL ... ..		39 points.

Some types of training, of course, set out primarily to teach pure knowledge. No one expects to benefit greatly in character from a hygiene course. Let us imagine the possible factor-weighting on a cooking course, a course of clerical duties, and a PT course.

## COOKING COURSE

FACTOR	WEIGHTING
W & S ... ..	3 points.
A ... ..	3 points.
K ... ..	9 points.

Here the only important factor is the knowledge of how to cook. A man will, however, be a slightly better cook if he is reliable (W), resourceful (S), energetic (A).

## COURSE OF CLERICAL DUTIES

FACTOR	WEIGHTING
W ... ..	3 points.
A ... ..	3 points.
I (Intelligence) ... ..	5 points.
K ... ..	9 points.

Assuming that this course is for the most junior type of clerk, knowledge of his duties is by far the most important item. He must be intelligent in that he should be able to express himself well, and he must be reliable in his limited sphere. The S quality does not appear; too much initiative and imagination would be a positive disadvantage.

## PT COURSE

FACTOR	WEIGHTING
W ... ..	3 points.
A ... ..	5 points.
K ... ..	9 points.

To be good at PT a man must learn K in the widest sense, knowledge including skills and techniques; he must have high activity and a certain amount of guts. When the K factor bulks as large as it has done in these three examples, it is often wise to break it down, *eg*, in this case:—

FACTOR	WEIGHTING
K { Agility ... ..	3 points.
Dexterity ... ..	3 points.
Endurance ... ..	3 points.

## 7

Now that the factors have been decided, the next step is to decide how to measure them. K can nearly always be measured by some form of test, paper tests for pure knowledge, and for skills and techniques practical tests or exercises with some equable system of allotting marks. When it comes to measuring qualities of personality, there is no such easy yardstick. The qualities of W and A can be measured by a psychologist in a laboratory, but this is beyond the



means of most training establishments. The only practical method is for these qualities to be assessed by the class instructor. Except for the outstandingly good or bad personalities it will be some time before the instructor gets to know his class well enough to be able to assess their qualities of character. The length of time needed will vary with the size of the class and the amount of contact between instructor and class. It may be taken, however, as a rough yardstick that an instructor who teaches a class of 30 for an average of half the periods in a day can give a reasonably reliable assessment of their WSA qualities after three weeks. A man is more easily judged under testing conditions in the field than in the classroom. Frequently a student who has been marked high in W for several months will, after a gruelling endurance test, be marked right down to the bottom of the scale. This does not mean that his W quality has suddenly decreased, but that he managed to conceal his weakness from the instructor until the endurance test exposed his bluff.

8

The instructor's assessment of a student is bound to be, to a certain extent, subjective. That is, it will be influenced by the whims and fancies of his own nature. We all think that we can judge men, yet divergent opinions of even the most experienced judges prove that each has his own assessment, and that all of these assessments cannot be right. We can, however, approach an objective result if the assessor is taught to make his assessment:—

DELIBERATE  
ISOLATED  
COMPARATIVE

9

- His assessment must be deliberate in that it must be a CONSCIOUS EFFORT and not the result of a general impression. If an instructor goes through no deliberate process of weighing the factors in assessment, his ultimate opinion will often be based on personal liking or antipathy or on superficial disadvantages, such as a spotty face or a poor physique.
- His assessment must be ISOLATED in that it is easier to reach a good assessment of anything by judging the factors separately and totalling the sum of the results than by making a general assessment of the whole. When a wine taster is assessing the quality of a wine, for instance, he will decide the five or six most important attributes of that wine, such as body, dryness, sweetness, bouquet, etc. He will then take a sip and test it in the light of the first factor—has it got good body? He will go on to test for the second factor—

is it too sweet or too dry? And so on, until he has assessed all the factors and is in a position to make a balanced judgment. Similarly, to reach an accurate assessment of a student's personality, each factor must be studied in isolation first, given its due weight and added up to a comprehensive total.

His assessment must be COMPARATIVE in that it is easier to arrange a class in their order of merit than to judge whether or not their personality reaches a certain fixed standard. Let us consider this question of comparative rating more fully.

10

Ability must be related to some fixed standard before it can be measured. If a man tells you that he scored 60 per cent in an examination, this figure alone means very little. The pass mark may have been 70 per cent or 50 per cent, and the scale of marking may have been severe or it may have been indulgent. Again, the rest of the class may have scored between 61 per cent and 80 per cent, or they may all have scored below 50 per cent.

A fixed standard can usually be set against which knowledge can be measured, such as the Tests of Elementary Training, passing-out tests and examinations, etc, but to find a standard against which personality can be measured is more difficult. It is almost impossible to deduce that Smith's W is 60 per cent and Brown's is 45 per cent. Hence the only serviceable method we can use is to rate men in their order of merit, and by doing this we shall find that the standard we are using is the personality of the AVERAGE MAN, and that the men are graded by their DEVIATION FROM THE AVERAGE.

11

If a large enough sample of men had their ability tested in any field a graph of their results would appear something like this:—

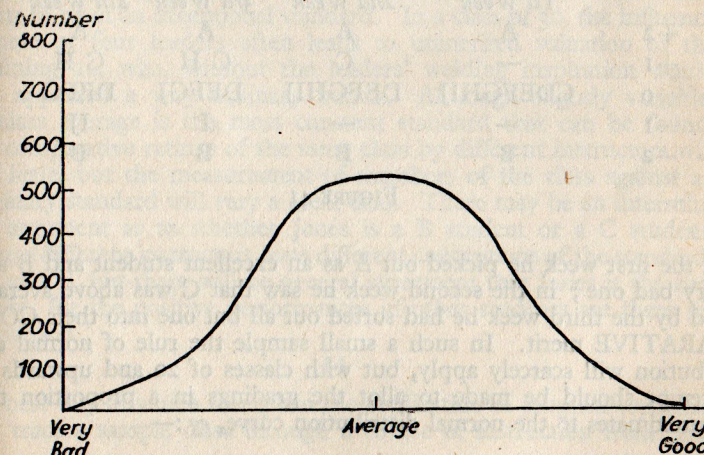


FIGURE 40



The performance of the vast majority would be of roughly the same standard, and there would be a minority on each side tailing off to the most expert man at one end and to the biggest dud at the other. Of all the principles that govern the measurement of ability, this rule of NORMAL DISTRIBUTION is the most important.

12

The measurement of personality from the average man works out in practice as follows. Every one of the factor-weights shown in the examples are odd numbers; they can be split into a + and - scale centring round an average 0. Thus a factor weighted at 7 points would be shown:—

+3	...	...	Excellent
+2	...	...	Good
+1	...	...	Above average
0	...	...	Average
-1	...	...	Below average
-2	...	...	Bad
-3	...	...	Very bad

Whereas it is often difficult to give a straight answer to the question: "Is Jones a good student?" it is easier to answer the question: "Is Jones a better student than Brown?" The instructor marking his class for one of the personality factors would first of all pick out the best and the worst, and as he got to know the class better, he would sort out the central mass into os, +ones and -ones. Here is an example of an instructor assessing the quality W in a class of 10 men on a 5-point scale.

	1st Week	2nd Week	3rd Week	4th Week
+2	A	A	A	A
+1	—	C	C H	C H
0	CDEFGHIJ	DEFGHIJ	DEFGJ	DEFG
-1	—	—	I	IJ
-2	B	B	B	B

FIGURE 41

In the first week he picked out A as an excellent student and B as a very bad one; in the second week he saw that C was above average, and by the third week he had sorted out all but one into their COMPARATIVE merit. In such a small sample the rule of normal distribution will scarcely apply, but with classes of 20 and upwards an attempt should be made to allot the gradings in a proportion that approximates to the normal distribution curve, eg:—

## PROPORTION OF DISTRIBUTION

	+4	+3	+2	+1	0	-1	-2	-3	-4
3-Point scale				1	2	1			
5-Point scale			1	2	4	2	1		
7-Point scale		1	2	4	12	4	2	1	
9-Point scale	1	2	4	6	20	6	4	2	1

FIGURE 42

Suppose an instructor were assessing on a five-point scale a class of 20 students whose personalities he knew well. First he would pick the two best and grade them +2, then the two worst and grade them -2. Of those left, the four best would be +1, the four worst -1, and the remaining eight 0. The distribution would be in the proportion, 1, 2, 4, 2, 1. No class is likely to fall into this proportion exactly, and quite wide variations should be tolerated so long as they cancel each other out in the long run. If, however, an instructor consistently shows the same type of deviation in his marking (ie, too many +twos and +ones or too large a nought class) his assessments are suspect.

13

The standard we have taken, then, against which to measure the factors of personality is that of the average students in the class. This is not an ideal standard, because classes will vary in quality; sometimes the standard of the average will be higher or lower than at others. This variation is not nearly so great, however, as most instructors suppose it to be. A "bad" class or a "good" class does not owe its variation so much to the standard of the individual personalities as to the group morale. Frequently a few outstanding personalities will create an *esprit de corps* within a class or sub-unit that makes the whole class appear to be of an exceptional standard. In a class of 30, the influence of three or four leaders often leads to unmerited valuation of the remaining 26, who, without the leaders' welding inspiration would have appeared a very ordinary bunch. Although slightly variable, the class average is the most constant standard that can be found. The comparative ratings of the same class by different instructors will vary little, but the measurement of members of the class against an imaginary standard will vary a great deal. There may be an interminable argument as to whether Jones is a B student or a C student, because different instructors have different conceptions of the standards of B and C, but there will be general agreement that Jones is the best student, for the positive performances of other students are there for comparison.

14

The best way in which to explain the application of progress reporting is to trace a sample class through a course of instruction from their



first day to their last. The standard example used throughout will be that of a platoon of 30 officer cadets passing through a 17 weeks course at an Infantry OCTU.

# ONE

The first step is to select and weight the factors of assessment. Those of our standard example were shown in full in Section 5. Here they are again :—

W	...	...	7 points
M	...	...	3 "
S	...	...	3 "
A	...	...	7 "
K	...	...	5 "
C	...	...	7 "
L	...	...	7 "

These can only be estimated for the first course of progress reporting, but experience will soon show whether or not they have been correctly weighted.

# TWO

Before the students arrive it is essential that all instructors should be quite clear what the definitions of the personality qualities are. This can best be achieved :—

- By relating the quality to the instructor's view of a student, *eg* :—

W

The  
+3  
Student

He can carry out work on his own responsibility and will persist in a line of action in the face of difficulties.  
A strong character.

The  
-3  
Student

He is weak-willed and vacillating. He sets himself no goal and has not the determination to persevere in any one line of action. He lacks grit and backbone, and is thoroughly irresponsible.

A

The  
+3  
Student

He is keen and enthusiastic, and applies himself to the job in hand with boundless energy. He is full of vitality and "go."

The  
-3  
Student

He lacks drive and enthusiasm, and is too easily satisfied with his performance. Appears indifferent or bored.  
Physically and mentally lazy.

- By practising assessment on well-known personalities such as local characters, public or historical figures, etc. a chart can be drawn up thus :—

	5-point scale			
	W	M	S	A
FALSTAFF	-2	0	+2	-2
CROMWELL	+2	+2	-2	+2
Dr. JOHNSON	+1	+2	+2	-2

FIGURE 43

- By a discussion of the qualities, with all instructors present.

The instructors should then be issued with progress reporting diary and documents.

15

# THREE

As soon as the students arrive, they should have a comprehensive test in as many of the assessment factors as possible. K can be tested specifically, exercises can be set which will reveal the qualities of C and L, data for an assessment of WSA can be obtained from an endurance test and also from an initial interview with the instructor. The results of the initial tests in K and in any other factor specifically tested should be marked down by the instructor on a progress sheet for each student.

# FOUR

One period, or if necessary two, should be allotted to explain to the students the system of reporting. They should be made to understand :—

- That the system is designed to help them and to ensure that as many as possible pass the course.
- That the factors on which they are being marked are those of character as well as learning. (Many students imagine that reports and grading are based on K alone.)
- That they will be told exactly where they stand in the weekly or monthly interview with their instructor.
- The whole system of reporting. (This should be explained together with the times and dates of the various tests.)

16

# FIVE

At the end of the first week or month, the first progress tests will be held. The personality factors are assessed by the platoon instructor imposing upon himself a



self-questionnaire. This is best printed as a pocket leaflet which the instructor can carry about and consult at will. Here is the "A" page from our standard example :—

**FACTOR "A"**  
**CONSIDER HIS ACTIVITY AND ENERGY IN TACKLING A JOB**

When he is interested in a job, does he go all out at it? Is he full of vitality and energy? We are concerned with the degree of his application in the first flush of enthusiasm only. If he gets tired of a job before it is completed, do not mark him down here; that will appear under W.

	Mark	Distribution Guide (30)
He is dynamic, exceptionally full of energy and "go" ... ..	+3	1
He shows great energy in tackling a job ...	+2	3
He is more energetic and enthusiastic than most cadets ... ..	+1	5
He displays neither more nor less energy than most cadets ... ..	0	12
Compared with the general run of cadets he lacks energy and vitality ... ..	-1	5
He is definitely inclined to be lazy or lethargic ... ..	-2	3
He is totally lacking in energy and "go" ...	-3	1

Other pages are laid out in a similar fashion, the whole appearing something like this :—

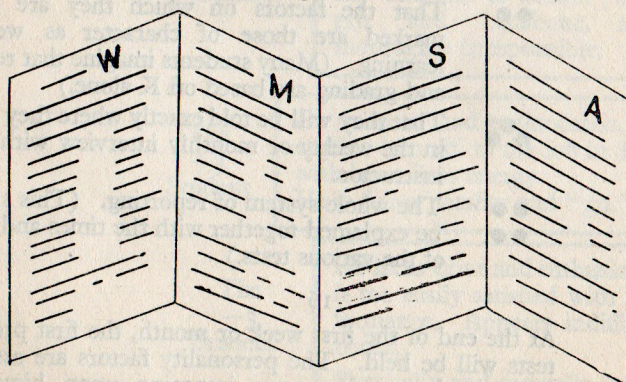


FIGURE 44

The personality factors are assessed solely from this questionnaire. The learning factors, in our standard example K, C and L, will often be tested by specialist instructors. The factor K, for instance, covers a large field including tactics, drill, weapon training, PT, etc. The instructors who test in these subjects send their results to the class instructor. The back of the same leaflet should list the data that the class instructor will receive. He can consider the learning factors in the light of these results, and confirm their evidence by a further self-questionnaire. Here is the "K" page from our standard example :—

**FACTOR "K"**  
**KNOWLEDGE**

Consider : Military Knowledge Test results, PT Test, WT Test and drill report.

In the light of these results and in your own opinion :—

	Mark	Distribution Guide
He absorbs and retains knowledge exceptionally well ... ..	+2	2
His knowledge is above average ... ..	+1	5
He is about as good as most ... ..	0	16
He is slow to pick up new subjects or cannot retain what he has learnt ... ..	-1	5
He is hopelessly behind the rest, or he will benefit from relegation ... ..	-2	2

The back of the leaflet will appear something like this :—

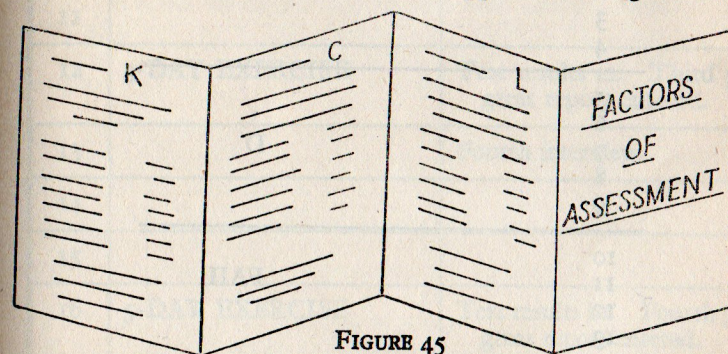


FIGURE 45

17

SIX

The results of the progress test are now entered on each cadet's progress sheet. The total marks gained from all



factors will give an accurate indication of the cadet's place in the order of merit in the class, *eg*,

	W	M	S	A	K	C	L	TOTAL	
Smith	+2	+1	+1	+2	+2	+2	+3	+13	(Top)
Brown	0	+1	-1	-1	+2	-1	0	0	(Average)
Jones	-1	-2	-1	-2	-2	-1	-3	-12	(Bottom)

SEVEN At the interview after each progress test, the student is shown his marks and his performance is discussed as described in Sections 22-26.

EIGHT The subsequent progress reports and interviews are conducted in the same manner. At the end of the course the course gradings can be taken from the class instructor's totals to give a readily reckoned result, *eg*,

REPORT GRADINGS	COURSE GRADINGS
+13	
12	A
11	
10	
9	
8	
7	B
6	
5	
4	
3	
2	
+1	
0	C
-1	
2	
3	
4	
5	
6	
7	D
8	
9	
10	
11	FAIL
12	
-13	

This cannot, of course, be done by rule of thumb, but at a properly conducted grading conference when discrepancies between instructor's markings, etc, can be adjusted.

The progress reporting diary summarizes the whole system. The following is the diary of our standard example :—

PROGRESS REPORTING DIARY.		
WEEK	CURRENT EVENT	ITEM
1	ARRIVE	Test day. System explained to students
2		Test results entered. First interview.
3		
4	FIRST ENDURANCE EXERCISE	Test results in. First progress report entered.
5		Second interview.
6		
7	SECOND ENDURANCE EXERCISE	
8		Test results in. Second progress report entered. Third interview.
9	LEAVE	
10		
11		
12	3-DAY EXERCISE	Test results in. Third progress report entered.
13		Fourth interview.
14		
15		
16	5-DAY EXERCISE	Test results in. Fourth progress report entered.
17	DEPART	Course gradings decided. Final interview.

FIGURE 46



Investigation shows that the ultimate decision whether to pass a student out or fail him is decided easily, and decided correctly, in eight cases out of ten. In the remaining 20 per cent, made up of borderline cases, the incidence of error is high, and in a school with a large turnover it may be possible, by introducing a system of progress reporting, to reduce the borderline area by as much as 10 per cent.

The basis of this system is to assess the student's promise, or his potentiality of doing well, at the beginning of the course. The factors that decide this promise rating will vary with the type of course, but it is safe to say that intelligence will nearly always be one of them, and that the other likely factors are personality (WSA), experience and initial standard of knowledge of the student.

At the end of the course, when the borderline cases are reviewed, the promise rating will be an additional factor to guide the decision of pass or fail. Men with high promise but poor progress obviously deserve better treatment than those whose promise and progress are both poor. It may be that a man with high promise has been badly taught, or has missed instruction through sickness or other causes. He should, if possible, be given a further chance by relegation. The borderline case with low promise can, however, be failed without compunction.

## 20

The following practical points in the application of progress reporting are worth noting:—

- The system must not be treated as a juggernaut which pigeon-holes students with automatic precision. Individual cases must be treated on their own merits. It is more important to do justice to each student than to make the distribution figures balance evenly.
- Instructors tend to mark their students too high. There is something derogatory about the word 'average,' and it will be found that on a 5-point scale most instructors will mark their class so that the true average falls at +1. If this optimism is taken into consideration, it can easily be offset by a little juggling with the figures. It is not easy, nor always desirable, to eradicate it, for it is a healthy symptom of good *esprit de corps*.
- In spite of being told to mark on the average FOR THE CLASS, most instructors tend to mark on their own opinion of the average student formed in the light of ALL THE CLASSES THEY HAVE INSTRUCTED. This tendency must be accepted as inevitable and taken into consideration when reconciling the standard of the reports of different instructors.
- If instructors are not sure of their class they will tend to place too large a proportion in the average grade. This must be remembered when designing a system; it is often impossible to graduate students into a 9-point scale in a course which lasts only two or three weeks.

The principles underlying progress reporting can be applied in widely different forms to suit different courses of training. At first glance the system may seem complicated and expensive of instructors' time. There is undoubtedly a great deal of labour in initiating a system of progress reporting, but once functioning smoothly the small extra claim on the instructor's time is offset by the following advantages:—

- In that its primary object is to motivate the student, progress reporting differs from other forms of reporting, which set out only to measure the student's ability. The instructor will find, however, that when he has applied the system to a course of students, he knows more about his class and is better equipped to report on them either verbally or in writing than would have been the case had the standard form of reporting been used. The usual forms have no machinery for giving data to the instructor, they only ask for it.
- Students on a course the result of which is important to their future are often unduly worried by the prospect of failure. Investigation shows that this state of mind, which is antagonistic to good learning, is far more common than might be supposed. Instructors are often unaware of the bad effects of this unnecessary anxiety, and by their attitude foster rather than allay the "RTU bogey." A system of progress reporting well applied will banish all undue anxiety.
- The instructor is clear in his own mind what he is looking for. Vague phrases such as "Jones is a little ineffective, but he's always willing," are replaced by a concise definition "Jones is weak in W, but he's a +2 man in A." A common language is spoken; the jargon may be unpleasing to the ear, but it is a more scientific description of character than loose abstract words, each with several shades of meaning.
- The student has great confidence in any efficient system of reporting, especially when it can be demonstrated that it is based on sound scientific and statistical principles. He will be impressed by the data shown him at his progress interview in a way that could otherwise only be equalled by an interview with a very exceptional personality.



Individual praise or blame makes a deeper impression on the memory of a student than any piece of instruction, no matter how impressive. There are obvious reasons for this. The question often uppermost in the student's mind is "How am I getting on?", and any indication of success will be eagerly awaited. Again, the instructor speaks from Olympian heights, to be noticed at all is encouraging, to gain his favour is the greatest privilege, to incur his displeasure the deepest disgrace. All these natural sentiments can be exploited to achieve better learning by instituting a system of personal interviews between the student and instructor.

From an extensive study of the attitude towards interviews in a training establishment in which they had long been a feature, the fact emerged that, whereas to the student the interview was without exception the most eagerly anticipated and the most thoroughly ruminated item in the whole course, to the instructor it was an incidental routine matter, to be discharged efficiently but summarily. Students about whom the instructor knew little were dismissed in a minute or two, long queues waited outside doors, and interviews took place in the restless atmosphere of half-hour breaks, free afternoons, or other recreational periods. The interview is such a powerful motivating agent that it is worth while going to considerable pains to ensure that it achieves its full effect. Its status should be raised to that of a full, unhurried ten minutes chat with each student, taking place within working hours, or at a time specifically laid aside for the purpose. There is, moreover, considerable art in conducting the interview. Interview technique can only be acquired by experience. The following few sections, however, are designed to give the inexperienced instructor a few practical hints which will help to start him on his way.

First of all, the stage must be set to create a pleasant informal atmosphere. The interview should take place in a room where the cadet can feel at home; in a small recreation room for instance rather than in an office. The student should be seated facing the instructor, both seated on chairs of the same height placed about 6 feet apart. The light should be on the student's face but not in his eyes. If cigarettes can be provided from some fund they will help to break the ice and put the student at ease. He should be allowed to take his cap off and to relax, for the instructor will have better indication of a student's personality if he can see the whole of his head and can observe his "off parade" manner of speech and behaviour.

The instructor should spend a few minutes in preparing a form of interview before the student arrives. He must first consider what will be in the student's mind. Usually there will be two main questions:—

HOW AM I DOING?  
HOW CAN I DO BETTER?

It is the instructor's first duty to answer these two questions, first by telling the student exactly how he stands as regards the possibility of passing out or failure, and secondly by giving him practical advice on how to improve. It would be unwise, however, to plunge straight into these questions, which will need tactful handling, and it is better to open the interview by talking about some subject of mutual interest so that an easy, friendly atmosphere can be created. It is possible to make this contact by discussing a man's hobby, his home town, an exercise in which he has performed, or any subject in which the instructor and the student are both interested and about which they both know a little. It will make the remainder of the interview twice as easy. After business has been discussed, if the instructor is the student's own officer, or even if he is not, a tactful enquiry about the student's personal life will often give him a chance to get something off his chest or to clear up minor worries. Finally, no matter how unpromising, the student should be dismissed with a few words of encouragement in order to ensure the maximum response to the advice given in the course of the interview.

Each personality must, of course, be interviewed in a different manner, but the form of interview described above is better than no form at all, and it can be summarized thus:—

- Contact.
- How he stands.
- How he can improve.
- Personal affairs.
- Final encouragement.



Or, to give a practical example :

# SJT. SMITH

CONTACT : Sheep-farming.

Performance as syndicate leader in last TEWT.

HOW HE STANDS : Should get a B.  
Show test results.

HOW HE CAN IMPROVE : Talks too fast giving orders.  
Map Reading weak. Should study on his own.  
Too excitable.

PERSONAL AFFAIRS : Wife's illness.

FINAL ENCOURAGEMENT : Keen. Fit. Doing well.

26

- The instructor should make all his advice to the student PRACTICAL ADVICE. The following exhortations are difficult to interpret :—

“ Smith, you must pull your socks up in weapon training.”

“ Jones, you must put your back into things more.”

These are quite clear :—

“ Smith, you must punch up those last three lessons on weapon training in your own time, and I shall note your test results next week.”

“ Jones, I want to see you moving faster in gun drill, volunteering to answer problems without being asked, and carrying out individual practice far more efficiently. I shall put you on as syndicate leader in to-morrow's exercise and watch you closely.”

- The instructor throughout the interview must, of course, be on his guard to distinguish between the student's genuine responses and answers given with the object of pleasing him.

- There must be no queue outside the door and no expectant mob waiting to greet the returning student with : “ Well what did he say to YOU ? ”

## TESTING

27

In this pamphlet testing is regarded mainly as a training aid. The following paragraphs will help the instructor in setting and marking tests for training. They must not, however, be regarded as a comprehensive guide to the technique of testing. When the validity of a test is important to a man's future, *eg*, a trade test, the test should be devised by a person of wide knowledge and experience of testing technique. This particularly applies to short answer questions which, if not properly constructed, are liable to give completely false results.

As we saw earlier in this chapter, if a man says he got 60 per cent in an exam, it means little unless we have a standard by which to measure his result. Standards may be fixed, as in the instance of certain qualifying examinations in which the student has to attain a certain percentage in each paper before he can pass, or the standard may be that of the remainder of the class, as for instance in certain competitive examinations where the top three candidates are selected and the remainder rejected. Except for certain standard tests such as TsOET, the latter method is by far the more useful for military testing. If we say that a student is 10th out of 100, we at once have a rough picture of his ability. The rules of normal distribution will always apply, that is that the ability of the majority will have a small range and the clever and stupid few will straggle out at each end. Hence, to say a man is 3rd or 98th out of a class of 100 has more significance than to say that he was 53rd or 48th, in which position a very few marks might have made a difference of ten or more places.

28

The advantage of rating a class rather than imposing a fixed standard may be seen from the following example. Suppose the same class of ten students were tested in the same subject by two different instructors, one strict, and one indulgent. The results might be as follows :—

MARKS	FIRST INSTRUCTOR	SECOND INSTRUCTOR
10	—	A
9	—	B
8	A	CD
7	—	—
6	B	EFG
5	—	—
4	CD	—
3	E	H
2	FG	I
1	H	J
0	IJ	—



Although the marks obtained in each test differed, the rating did not. If A had been given 10 marks for being top and J 1 mark for being bottom, the results would have been as follows :—

STUDENT	FIRST INSTRUCTOR	SECOND INSTRUCTOR
A	10 Marks	10 Marks
B	9 "	9 "
C	8 "	8 "
D	8 "	8 "
E	6 "	6 "
F	5 "	6 "
G	5 "	6 "
H	3 "	3 "
I	1 "	2 "
J	1 "	1 "

By this method the marks are almost the same for both tests, and since, as we have already seen, it is easier to decide the comparative ability of students than to fix an absolute standard, this is generally the best method to use.

29

In dealing with large classes, however, the rating figure is cumbersome. If a student were 134th out of 200 it would be hard to integrate this score with other results, such as the 5-point scales in the system of progress reporting. Again, the size of the class may change; in the next test his result may be 125th out of a class of 182, and it is not easy to decide at a glance whether or not he has improved. A system which is simple to work and easy to understand can be applied to bring the rating method of marking to manageable proportions. This system is based on the curve of normal distribution and is called "stanine" grading. There are nine grades into which a student may be placed, and the score given for each grade is from 9 to 1. Here is the rating table of a class of 100 students, given so that the distribution of students appears as a percentage :—

The best	3	students	...	Grade 9
The next	7	"	...	" 8
"	12	"	...	" 7
"	18	"	...	" 6
"	20	"	...	" 5
"	18	"	...	" 4
"	12	"	...	" 3
"	7	"	...	" 2
" worst	3	"	...	" 1

From this table it can be seen that more than 50 per cent of the students fall into classes 4, 5 and 6, while only 6 per cent fall into classes 1 and 9. The table can be shown graphically in conjunction with the normal distribution curve.

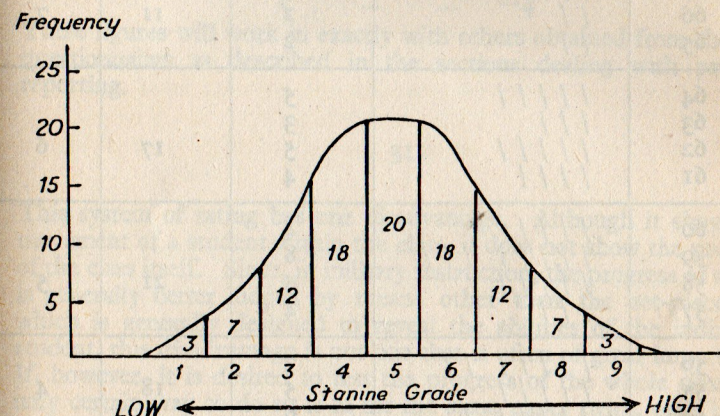


FIGURE 47

30

The following is the method by which any test score can be translated into stanine grades. Write down the whole range of marking in a column on the left-hand side of the page. Opposite each number put a tick for each student who gained that score. Add the total of ticks against each score to give the frequency. Divide the frequency as nearly as possible into groups proportionate to the stanine grade. Allot to each group its stanine grade. Here is an example, again for a class of 100 students.



Score obtained	Ticks for each student getting this score	Total or Frequency	Total in Grade	Stanine Grade
73	/	1	3	9
72	/ /	2		
71		0		
70	/ / /	3	8	8
69	/ / / / /	5		
68	/ / /	3	11	7
67	/ / / /	4		
66	/ /	2		
65	/ /	2		
64	/ / / / /	5	17	6
63	/ / /	3		
62	/ / / / /	5		
61	/ / / / /	4		
60	/ / / /	4	21	5
59	/ / / / / / / /	8		
58	/ / / / /	5		
57	/ / / /	4		
56	/ / / / / / / /	7	18	4
55	/ / / / /	5		
54	/ / / / / /	6		
53	/ / / / /	5	12	3
52	/ / / / /	5		
51	/ /	2		
50	/ / /	3	7	2
49	/ / /	3		
48	/	1		
47	/	1	3	1
46		0		
45	/ /	2		
TOTAL 100		TOTAL 100	TOTAL 100	

FIGURE 48

It will be noted that in grades 8, 7, 6 and 5 the frequency did not allow an exact grouping, hence the nearest approximation to the correct proportion (7, 12, 18, 20) (8, 11, 17 and 21) was taken.

A student's test results over a course will be clear at a glance if they are kept by this method. If his grades are 4, 5, 5, 6 he has improved ; if 4, 4, 3, 2 he has fallen off. It is often convenient to treat the stanine grades as a 9-point scale, like this :—

# STANINE GRADE

9	...	...	+4
8	...	...	+3
7	...	...	+2
6	...	...	+1
5	...	...	0
4	...	...	-1
3	...	...	-2
2	...	...	-3
1	...	...	-4

These figures will work in exactly with others obtained from the self-questionnaires as described in the sections dealing with progress reporting.

31

This system of rating has one disadvantage. Although it shows the movement of a student within the class, it does not show the progress of the class itself. Since, in military instruction, the progress of a class is generally better judged by means other than the set-piece test which is generally designed to reveal the abilities of the individual student, this disadvantage is not one that is often of great importance. If, however, it is desired to test the progress of the whole class, the only certain way to do so is to set the same paper twice, once before and once after instruction. If the dates of testing are so close that students may remember enough of the first test to look up the subjects just before the second test is held, matched tests can be set by writing 100 questions on slips of paper and drawing out 50 questions for each test. These two papers are more likely to be matched than two tests written one after the other, because the instructor's ingenuity is often taxed to find enough questions for the second paper, and it will tend to consist of questions which he has discarded earlier as too easy or too difficult. It is very hard to match two papers set with a long interval between the dates of composition.

32

In setting a test it should be the object of the instructor to make the questions of just that standard which will not be too easy for more than the few top students in the class nor too difficult for more than the bottom few. By this means he will ensure a wide distribution of scores which will allow a more accurate rating of the class.



Here are three examples of the results of some badly set tests taken by a class of 20 students :—

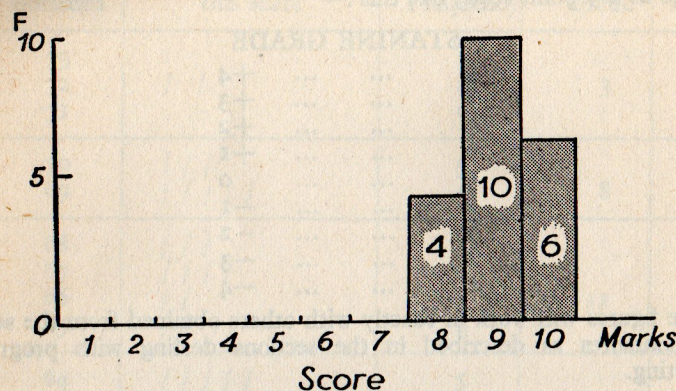


FIGURE 49

Too easy. Six students got full marks ; ten, or half the class, got nine marks, and four got eight marks. The range of scoring is only 3 marks ; it would be impossible to rate the class into more than a head, a body, and a tail.

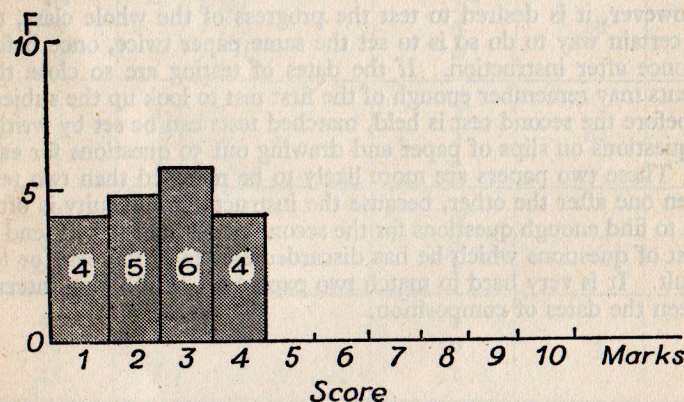


FIGURE 50

Too difficult. The range is only four marks and again it would be impossible to rate the class.

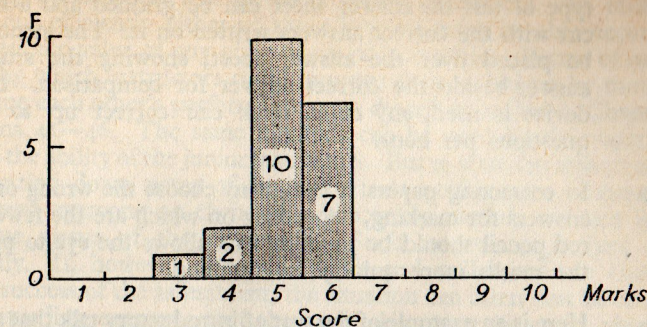


FIGURE 51

Some questions too easy, some too difficult. In this test the class all made approximately the same mistakes.

And here is an example of a well-set test :—

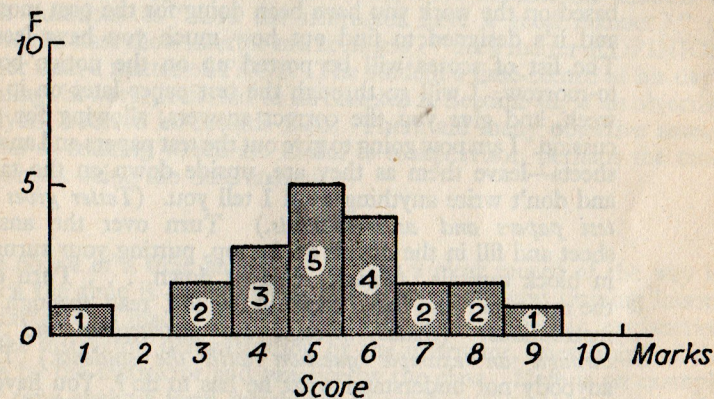


FIGURE 52

The score extends over the whole range of working, and the class can be rated far more accurately. In these examples the range of scoring has been shown as from 1—10. Graduation is, of course, far easier on a range of from 1 to 100, for it is then unlikely, in a well-set test, that out of a class of 20 students more than two will get the same score.

Here are some practical points to be remembered in setting, holding and marking tests :—

- In marking tests it is more convenient if the answer sheets are separate from the test papers. In the alternative answer



type of test the answer sheet can be gridded and a stencil cut with the correct answers written on it. The stencil can be placed over the answer sheet, showing the student's answer beside the correct answer for comparison. If this device is used, any office clerk can correct up to 2,000 questions per hour.

- In correcting papers it is best to choose the wrong or right answers for marking, depending on which are the fewer. A red pencil should be used, as this allows the eye to pick up the marks more quickly for totalling.

- Here is an example of the sort of introductory talk that should be given to students before applying a test of the alternative answer type.

"Before we start this test, get yourselves spread out to the ends of each table so that you have plenty of elbow-room. See that you have a sharpened pencil and, if you wish to smoke, light up now. (Pause.) The test you are going to do now is based on the work you have been doing for the past month, and it's designed to find out how much you have learnt. The list of scores will be posted up on the notice board to-morrow. I will go through the test paper later on in the week, and give you the correct answers, allowing for discussion. I am now going to give out the test papers and answer sheets—leave them as they are, upside down on the table, and don't write anything until I tell you. (Tester gives out test papers and answer sheets.) Turn over the answer sheet and fill in the details at the top, putting your surname in block capitals. (Pause.) Pencils down. . . . Turn over the test paper and listen carefully while I read through the instructions. (Reads through the instructions and goes through an example question with the students.) Does anybody not understand what he has to do? You have 20 minutes in which to answer 60 questions, and I will give you the time at five-minute intervals. Don't waste time over any question which is too difficult, just put a cross and carry on with the next one. If you finish before time is up, remain quiet and check through your answers. Is anybody not clear? . . . Right—start now."

## THE SUPERVISION AND ASSESSMENT OF TRAINING

34

The task of the supervisor is twofold; to arrange and organize the training of several squads or classes at the same time, and to improve

training by assisting and advising junior instructors. In order to carry out efficiently either of these jobs he must be able accurately to assess the value of any given piece of instruction. Forms of assessment by which instructors could improve their technique by mutually assessing each other's performance were described in Part 1, Chapter 3, Sections 41—46. The same methods can be used by the supervisor to rate the ability of the junior instructors. But to walk about the training area jotting down notes of an instructor's performance, although it may keep everyone on their toes, is scarcely tactful, and tact is the supreme virtue of the supervisor. Such assessment is best done mentally. If, however, a pencil, paper and mill-board are essential to the success of the assessment, the situation can often best be covered by persuading everyone that they are taking part in some objective scientific experiment, the object of which is to improve training, and not to spy on instructors.

35

Assessments of training may be subjective or objective. The instructor's assessment form just referred to is subjective because the answers to such questions as "Did the instructor have a good manner?" or "Did the class show interest and keenness?" are a matter of OPINION rather than a matter of FACT. The student's time-record of his day's training, however, referred to in Chapter 2, Section 38, is an objective analysis, because he records facts. There are many objective assessments of training which are useful to a supervisor, perhaps the most important being the time analysis.

36

The object of a time analysis is to give a clear record of the way in which the time is spent during a lesson. A weapon training lesson, for instance, is made up of the following main elements: explanation by the instructor, demonstration by the instructor, questioning of the class by the instructor and practice by the class. Here is an example of a time analysis form which can be used to record the course of a weapon training lesson:—

Time (Minutes)	0	5	10	15	20	25	Remarks
Prelims							
Questions		•	•	•		••	Good
		•	•	•		•	Indifferent
		•					Bad
Explan							Talks too fast
Demonstra							All Good
Practise							

FIGURE 53

From a glance at this form it is clear that the first two minutes of the



lesson were spent in inspecting arms, arranging the squad, etc. The next two minutes were spent in the instructor questioning the squad. He asked five questions in all, two were good, two indifferent, and one bad. Minutes 4-8 were given to an explanation by the instructor accompanied in the last two minutes by a demonstration. The class then practised for four minutes, and so on. Subjective remarks are written in the right-hand column.

Here is a more detailed form for the same lesson :—

Time	Q	E	D	R	Subject Matter	Q	P	W	Remarks
1-0					Preliminaries				
2-0					Revision of				
3-0					Last Lesson				Class all attentive
4-0									during Questions
5-0					Jones asks Question				
6-0					on Backsight Leaf				
7-0					Explanation Phase 1				Speaks too
8-0									Fast
9-0					Practice Phase 1				Good Practice
10-0									

Etc.

FIGURE 54

The left-hand group of columns indicates the activities of the instructor ; the headings represent :—

- Q ... Questions.
- E ... Explanation.
- D ... Demonstration.
- R ... Revision (Summaries, etc.).

The right-hand group of columns indicates the activities of the class ; the headings represent :—

- Q ... Questions from the class to the instructor.
- P ... Practice by the class.
- W ... Time wasted.

The subject matter column shows what part of the lesson is being taught, the remarks column can be used for subjective observations. This form gives much additional data and greater detail in the measurement of time. A stop-watch must be used to ensure sufficient accuracy.

37

The value of these accurate time-records is great. Here are some of its advantages :—

It is invaluable as a basis for discussing the lesson with the instructor. Criticism is respected more when it is supported by a factual account of what went on in the lesson.

The record of an instructor can be compared with the record of an expert instructor taking the same lesson with the same type of class, and the differences noted.

A standard optimum record can be given to the instructor when he is preparing his lesson. Thus he will gain ready-made data for the timing of his lesson plan.

The record will often give the data for an index of efficiency. An index of efficiency in weapon training is—

$$E=P+Q+T,$$

where P is the time spent on practice, Q the time spent on good questioning and T the time spent on testing. Data from records such as the second example showed that at a specialized training establishment which instructed weapon training alone, the average standard of efficiency was 78 per cent, and at general training depots it was only 56 per cent.

38

It would be fruitless to multiply the examples of various methods of assessing training. Each supervisor must, as always, first clarify the object of the training, and then devise some way of measuring the efficiency of the main factors that go towards achieving that object. A reliable analysis of the value of training will be of untold value to the chief instructor in shaping the syllabus, in building the block programme, and in forming an opinion of the abilities and limitations of his instructional team.

usually be well worth the time expended in this chapter relate something of an artist and an engineer rolled into one, and if he is to handle prices he will need some literary talent as well. His staff may be one handyman, or they may be ten apt students who are lent to him as workshop hands for a few hours per week. Any natural reluctance to interfere with the instruction of students in this way must be balanced against an assessment of the benefit future generations will gain from their contribution.

In general, the equipment and devices described in this chapter relate to indoor instruction. Outdoor methods of instruction tend to differ so much between arms and to be so specialized within arms that most outdoor equipment has a very limited public. Again, arms training pamphlets and many numbers of the Army Training Memorandum have descriptions of items of specialized training equipment where information can readily be found by those who seek it.



## CHAPTER

# 5

## Training Aids and Devices

### INTRODUCTION

#### I

This chapter deals with the paraphernalia of instruction. To give the junior instructor a fair chance to make the most of his lesson, he should have available every training aid that will make his task easier or his instruction more effective. There are comparatively few items of training equipment for which the chief instructor can indent through normal channels. The vast majority will owe their existence to the initiative and industry of himself and his staff. Some organized factory or workshop for the production of training aids is essential in all large training schools, but there is not usually any establishment for the workmen nor any normal channel of supply for the materials. If, however, an enterprising instructor, perhaps the methods officer, is put in charge of production, and if he is given time and encouragement to experiment, his eventual output, both in quantity and quality, will usually be well worth the time expended. He must, however, be something of an artist, a carpenter and an engineer rolled into one, and, if he is to handle precis, he will need some literary talent as well. His staff may be one handyman, or they may be ten apt students who are lent to him as workshop-hands for a few hours per week. Any natural reluctance to interfere with the instruction of students in this way must be balanced against an assessment of the benefit future generations will gain from their contribution.

In general, the equipment and devices described in this chapter relate to indoor instruction. Outdoor methods of instruction tend to differ so much between arms and to be so specialized within arms that most outdoor equipment has a very limited public. Again, arms training pamphlets and many numbers of the Army Training Memorandum have descriptions of items of specialized training equipment where information can readily be found by those who seek it.

Before plunging into a sea of technicalities it is necessary to issue one warning. Training equipment is a *means to an end*, not an end in itself. Many man-hours have been wasted designing intricate gadgets which eventually teach little, and much ingenuity has been spent in perverting good training devices to uses for which they were never intended. The common situation of father playing with the toy trains while the disconsolate little Johnny looks on, is one worth keeping in mind.

### PREVIEW—CHAPTER 5

	Sections
NOTES—PRECIS—PAMPHLETS ...	2-15
FILMS—FILMSTRIPS—EPIDIASCOPES ...	16-18
MODELS, SAND TABLES & CLOTH MODELS	19-22
OTHER VISUAL AIDS ...	23-30
WORKSHOP EQUIPMENT ...	31
MISCELLANEOUS TRAINING DEVICES ...	32-35

### NOTES, PRECIS, AND PAMPHLETS

#### 2

Many lessons, lectures especially, cannot be thoroughly assimilated by the class at the time of reception. Some tangible memory-aid must be taken away from the classroom to allow the lesson to be studied in retrospect. Or it may be that the subject is one which needs only a brief survey in order to indicate the sources from which information can be obtained, if and when it is needed. Notes, precis and pamphlets serve both as a memory-aid and as a library for reference and, since time, paper and effort are often wasted by failing to understand their proper uses, it will be worth while to study the subject in detail.

#### 3

As we saw in Part I, Chapter 5, Section 21, note-taking may be uncontrolled, controlled, or the notes may be dictated *verbatim*. The uncontrolled system is only suitable for classes of high intelligence who have been trained to take their own notes; such classes are seldom found below commissioned rank. Here is an assessment of the advantages and disadvantages of uncontrolled note-taking.



## ADVANTAGES

- The act of writing something down helps to imprint it on the memory.
- Each student has his own way of recording information. He will turn up and find a subject more readily in his own notes than in some impersonal publication.
- There is a pelmanistic advantage in a man making his own precis. Words and ideas have associations peculiar to individuals. Thus a perfect set of notes is better than any precis, but only to the person who wrote them.

## DISADVANTAGES

- Attention is lost and continuity broken by the distraction caused by writing.
- There is usually a considerable lack of discrimination in the selection of what to write down.
- The student is unable to see the relative importance of different points until the subject can be seen as a whole, *ie*, until the end of the period.

4

An experiment in the value of uncontrolled notes versus precis was tried with a sample of officer cadets who, in respect of their standard of intelligence, might be considered on the borderline of ability to take such notes. Two equally graduated classes of fifty cadets were concerned. Class 'A' were issued with Students' Precis, of the type described later in the chapter, for ten lectures on various subjects, given over a period of a fortnight. Class 'B' took uncontrolled notes at the same lectures. The result was as follows:—

	A	B	
Precis studied and memorized accurately	8%	4%	Notes rewritten, studied and learnt.
Precis read but not memorized	82%	8%	Notes read through and polished up.
Precis not read, but filed and available when needed	8%	64%	Notes not looked at after period, but legible and of a certain limited value for reference.
Precis lost	2%	24%	Notes lost or illegible.

FIGURE 55

In the example quoted, if we equate the note-takers versus the precis-receivers, we find that but for the two best note-takers, the remainder might just as well not have bothered. For them, the completeness, accuracy, clarity and better logical sequence of the precis would undoubtedly have outweighed any pelmanistic advantage gained from writing their own notes. It is, of course, possible to adopt both systems at once, but still the disadvantage of uncontrolled notes will have to be taken into account. This example, of course, has not a general application. It is, however, illuminating, and supports the view that the note-taking-game is not usually worth the loss-of-attention candle. The lower the standard of intelligence, the more true will this be.

5

The instructor can control note-taking by pausing for a few moments after each convenient phase and giving the class time to write their notes with undivided attention. The notes can then be passed to him once a week for examination and approval. This system avoids many of the disadvantages of uncontrolled notes, but it imposes an intolerable burden upon the instructor. Unfortunately, if the check is not held, there is not usually a sufficiently powerful motive to ensure that full use is made of the work-pauses, nor is there any certainty that the notes are accurate. It may be taken as a rough guide that 10 minutes in every 40 must be used for this purpose and, while the time is not wholly wasted, there are other better and quicker ways of confirming learning than by writing it down. During the note-taking pause the instructor loses contact with the class, many of whom may stray into misapprehension or even into vacuity. This system is useful when used with a well-motivated class of average or higher intelligence when good precis are not available. A good precis will serve the student almost as well as these notes, and it will allow the instructor to spend many hours of his time in more fruitful activity than note-reading.

6

An effective method of confirming an important fact is to dictate it *verbatim* to the class. Principles, axioms and summaries lend themselves to this treatment. The effect of this device dwindles with repetition; three good things dictated in a period will be remembered, thirty will not, and the class to spend a period in writing down *verbatim* every word that the instructor utters is, of course, in violation of every rule of good instruction and common sense.



So much for notes, and their general inferiority to precis. The word "precis" itself is a general term often used indiscriminately to describe a piece of paper that may fulfil one of the following distinct functions :—

- A mass of factual material from which the instructor can shape his lesson.
- A four or five-page draft of the lesson, drawn up with headings, sections and sub-sections ; a precis in the literary sense.
- A full instructor's script, complete with timings and stage directions.
- Speaker's notes for use during the delivery of the lesson.
- A memory-aid drawn up for the student in tabloid form.
- An incomplete skeleton of the important points of the lesson to be filled in by the student's own notes.
- A comprehensive *vade-mecum* to which the student can refer whenever he may need information on the subject.

In order to distinguish these separate types of precis we shall call them by the following names :—

● INSTRUCTOR'S REFERENCE PRECIS

●● LITERARY PRECIS

●● INSTRUCTOR'S SCRIPT

●● SPEAKER'S NOTES

●● TABULATED PRECIS

●●● SKELETON PRECIS

●●● HANDBOOK

Before setting out to produce a precis, the instructor must be quite clear as to which of these several functions his precis is to perform. While differing conditions will entail a considerable latitude in the treatment of precis, certain general recommendations can be made as to its general form and contents in each role.

When the lesson material is not easily available from pamphlets, it is often useful to compile a complete reference precis which contains all the information necessary for the instructor's preparation of a subject. This type of precis is especially useful when material is scattered over many publications or is not to be found in print at all, as for instance with the subjects of man-management and military law. The factors governing the degree of standardization in instruction are discussed in Chapter 2, Section 37, and reference precis will, of course, only be needed when the chief instructor's staff does not prepare instruction right down to a standard lesson plan. Even if it is not worth while compiling a reference precis, it is always useful to build a complete pamphlet library CROSS-INDEXED BY SUBJECTS.

The literary precis is most often a result of muddled thinking and a desire to save labour and time. This two-to-five-page tabulated essay, written in general terms and consecutive English, was a common precis to issue with such subjects as tactics, strategy, general lecture and other not too technical lessons.

To ensure that the type of precis referred to is understood, here, as an example, is an extract from a typical literary precis of an introductory lecture on Attack given to officer cadets. (All examples quoted in this chapter have been, or still are, in use at an instructional establishment.)



# ATTACK

## 1. OBJECT

To teach cadets the general principles which govern an attack.

## 2. INTRODUCTION

This lecture is concerned principally with the Infantry role in attack. There are four basic principles which govern any attack. These are surprise, concentration, simplicity and speed.

## 3. GENERAL

LET US NOW CONSIDER THESE PRINCIPLES

(a) SURPRISE.—By far the most important factor governing an operation. It is very hard to conceal the fact that an attack is about to take place. The answer is to conceal where and when the attack is to take place. This is as much up to the junior commander as to the General Staff. On the lower level, an unexpected thing, done at the right moment, may well influence the course of any battle. This calls for powers of deception and initiative in the junior commander.

(b) CONCENTRATION.—However well concealed or planned an operation may be, there must be sufficient force to carry it through. This is achieved to-day by the use of large forces in depth operating on a narrow front under overwhelming fire support, particularly from artillery (eg, Alamein). There must be adequate reserves to go in at the right time and place to follow up the success of the initial striking force.

(c) SIMPLICITY.—Remember that, in war, things never go strictly according to plan. A commander has to be prepared to extemporize at short notice. The simpler the plan, the more clearly it is understood by subordinates, and, more important, the easier it is to adjust to meet any unforeseen circumstances. A complicated plan will not stand up to rehearsing at short notice.

(d) SPEED.—Speed is essential for the maintenance of momentum. It is best attained by rigid application of correct battle procedure. This entails looking ahead the whole time. Do not confuse with haste. A few seconds spent in thought before making a decision is always worth while.

4. Having considered the main principles, we shall now explain the terminology used in attack.

(a) OBJECTIVE AND OBJECT.—This is the cause of much confusion among cadets. OBJECT: Invariably to destroy the enemy. OBJECTIVE: A step towards the attainment of the object. This may appear to conflict at times with the object, but it is an integral part of a plan which is based on a single ultimate object.

ETC.

This precis went on to define a long list of tactical terms and finished by considering the advantages and disadvantages of different types of attack, day attack, night attack, co-ordinated attack and attack by infiltration. It covered five pages.

The object of this type of precis is not clear; since it was the only thing available, it was made to serve all purposes—instructor's reference, instructor's script, speaker's notes and students' precis—and it succeeded in none. Those distinct functions cannot be adequately performed by the same single precis. The literary precis, if it were not lost, came nearest to success as a student's reference, or if carefully collected in a spring file, as a handbook. But, as we shall see later, there is a better form of handbook than this. Much of the ground was often covered by pamphlets in which the same material was better expressed and more clearly laid out. In these circumstances a list of pamphlet references would have sufficed. It is particularly ill-suited to be a memory-aid, for instead of the memoranda being concentrated in easily learnt groups, they are diffused without taking count of any grouping to aid visual memory. It is safe to say that this type of precis should nearly always be avoided.

Lessons can be standardized to the extent of drawing up a complete instructor's script. This may be supplied with stage directions for training aids, and approximate timings. The script should be complete in that it details each item to be taught, but to avoid any danger of *verbatim* quotation by the instructor, it should be in note form. References to any pamphlets concerned should be included; for instructor's notes a margin down the right-hand side and a space after each summary are both useful. The following is an example of an instructor's script of the first phase of a lecture on Tank-Infantry Co-operation designed for Infantry NCOs.



# TANK INF CO-OPERATION:

## FIRST LECTURE

### INSTRUCTOR'S SCRIPT

REFS: MTP No. 63 1944

" " 59A 1943

TRG AIDS: 4 charts, film flash "hull down"

#### INTRODUCTION

##### 1. BATTLE OBJECT.

(Give an opening sales-talk on the following lines to drive home the importance of co-operation.)

A modern army hits its hardest punch when all arms are attacking in co-operation. Tanks and Infantry are the assaulting arms and their effort especially must be co-operative. CO-OPERATIVE is the operative word. The object of this instruction is to make you a good CO-OPERATOR. (Give an example from your own battle experience.)

##### 2. PREVIEW.

This lecture gives some information about tanks themselves, and some practical tips on Tank-Inf Co-operation. Then:—

(DATE) A second lecture on Tactics.

(DATE) A discussion to consolidate the two lectures.

(DATE) Cloth Model.

(DATE) Exercise.

#### WHAT A TANK CAN DO

##### 3. BE TANK MINDED.

Must understand what the tank crew thinks and feels in action. No tanks here, therefore must teach by lectures. Take first opportunity of exploring a tank thoroughly. What is it like in a tank?

#### CHARTS A & B

(a) *Crew Positions.*—Have you ever been locked in a cupboard? Shut-in feeling. Need for frequent rally for rests.

(b) *Vision.*—Great difference between open and closed visors. Importance of SA fire. Comds often forced to look out of turret. Casualties from snipers. Blind within 10—15 yds all round. Difficulty of distinguishing between friend and foe. Markings on backs of Infantry? Difficulty of locating Coy and Pl HQ. Flags? Quite blind at night. Great disadvantage to fight into the sun. Prefer to reach objective just before last light. Can move up at first light to an objective captured by night to ward off dawn counter-attack.

(c) Permanent noise within tks. All talking through intercom.

(d) *Vulnerability.* A.Tk gun master of the tank. Crew know that an A.Tk gun with an uninterrupted shoot at them will knock them out for certain. Hence prefer to shoot hull-down (gunner's line of sight clearing the ground) and to observe turret-down (Comd's line of sight from the open cupola clearing the ground).

#### SHOW FILM FLASH.

QUESTIONS FROM STUDENTS.

SUMMARY 1—3. (TIME: H + 15)

ETC.

#### II

Some instructors find speaker's notes a great help in the delivery of a lesson. These notes are not essential, and many a seasoned instructor will need only a few words scribbled on the back of an envelope, or perhaps he will dispense with them altogether; but to the novice they can be invaluable. Even if he never has to refer to his notes, the mere knowledge that they are available if needed will give him confidence. They should be used as unobtrusively as possible. For an indoor lecture a single sheet of foolscap will avoid the necessity of turning over; for an outdoor or a mobile lesson, single sides of postcards are probably the most convenient. The notes should be readable from the range of four feet. Capital typing is adequate for all but the most short-sighted. Since they are for the benefit of the instructor alone, the contents and layout of the notes are best decided by his individual preferences.



A convenient form, however, is an adaption of the Lesson Preparation Form, as shown in this example of speaker's notes for the phase of the Tank-Infantry Co-operation lecture that has already been quoted :—

TANK—INFANTRY CO-OPERATION :				
LECTURE I				
SPEAKER'S NOTES				
PHASE	HEADINGS	MATTER	AIDS	TIME
INTRODUCTION.	1. BATTLE OBJECT.			0
WHAT A TANK CAN DO.	2. PREVIEW.			1½
	3. TANK MINDED.	(a) CREW POSITION.	CHARTS	
		(b) VISION.	A	
		(c) NOISE.	&	
		(d) VULNERABILITY.	B	
			FILM	
			FLASH	10
QUESTIONS FROM STUDENTS				
SUMMARY				
ETC.				

12

The precis so far considered have been for the use of the instructor. Now we shall consider the more important side—that of the student. The precis can serve the student in two ways; it can be a visual memory-aid which will remind him at a glance of the salient features of the lesson, or it can be a work of reference. The first type should tabulate the essentials of the lecture in visual form, not necessarily in writing, for if the subject lends itself to illustration, the more diagrams

the better. Every dispensable word must be cut out, the fewer that are to be read the more will be remembered. Generalities should be avoided and factual examples in tabulated form used in their place. Here are two contrasted examples taken from an old student's precis of the literary type and from its revised tabloid form :—

ORIGINAL PRECIS	NEW TABLOID PRECIS
Tank Characteristics. The Inf tank has a low radius of action and good obstacle crossing abilities.	PETROL : 100 miles road 50 miles cross country. OBSTACLES : 4 ft. water. Gradients 1 × 1, etc.
The FUP should be at a considerable distance from the enemy lines so that the tanks will not give away their presence by noise.	FUP Not nearer enemy FDLs than 1,000 yds. or they will hear engines.

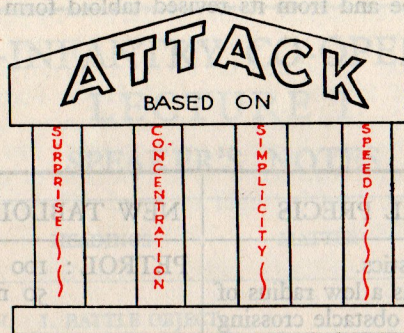
The first examples add nothing to what the student already knows, the second, though not always applicable or accurate, give a practical point of focus. Investigation shows that for classes of average intelligence and below, the tabulated precis should not contain more than 150 to 200 words. A longer precis is not memorable, nor is it likely even to be read. The student must deliberately be tempted to read the precis to its last word. It should have as much appeal as the duplicator can give it. Finally, above all, the precis must be CLEAR AT A GLANCE.

Here are three examples of tabulated precis. Compare the Attack tabulated precis with the Attack literary type precis quoted in Section 9, and consider the difference from the student's point of view.

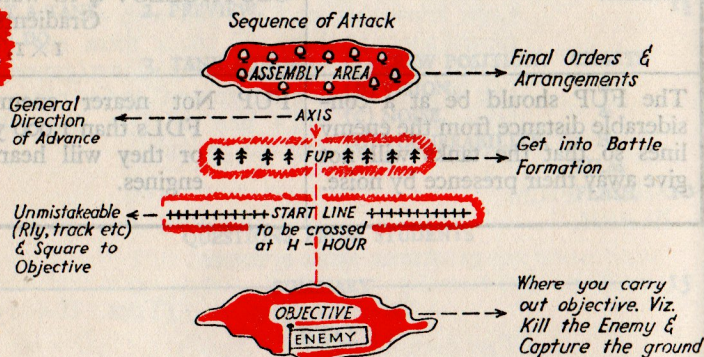


## EXAMPLE ONE—FOR OFFICER CADETS

1



2



3

### CO-ORDINATED

Using max. support of guns, tanks, air.  
Long preparation.  
Careful timings.

### ATTACKS CAN BE

### INFILTRATION

Seeping through and round enemy by small bodies.  
Rely on ground, fieldcraft, deception, surprise.

### NIGHT & DAY

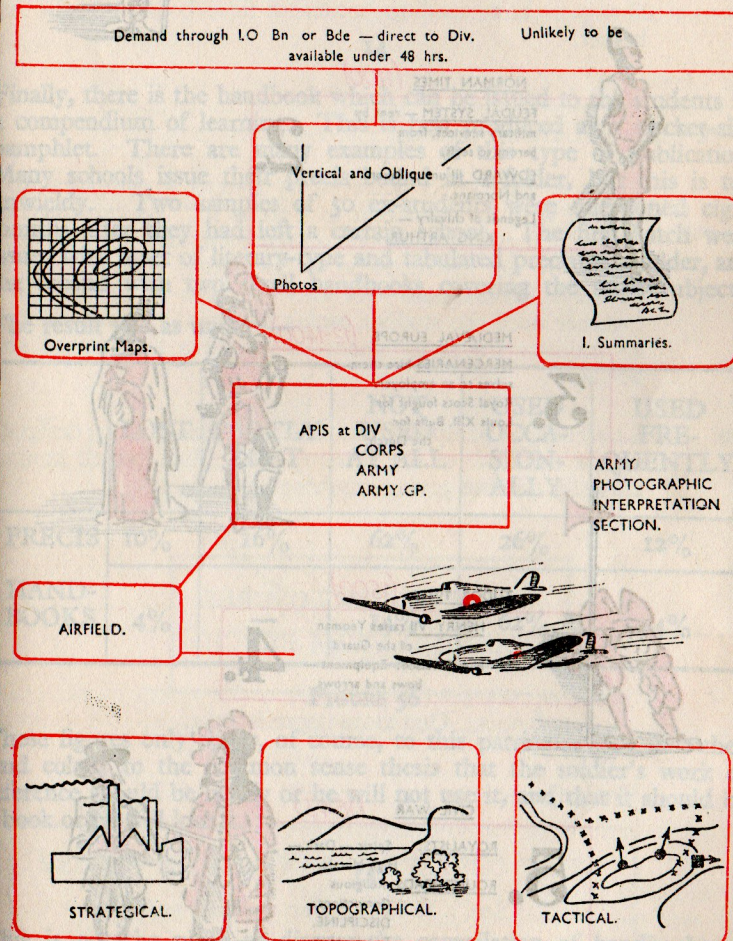
At NIGHT, you can't be seen, can't be aimed at.  
BUT it's much harder for you to get there.

## EXAMPLE TWO—FOR JUNIOR OFFICERS

### AIR PHOTOGRAPHS

COMMANDERS IN THE FIELD CAN BE SUPPLIED WITH

PINPOINTS: STEREO PAIRS: STRIPS: MOSAICS—BASIC COVER.





# HISTORY OF THE BRITISH ARMY

## SAXON TIMES (850)

1. **ALFRED THE GREAT**  
Vs. THE DANES  
First English national army.  
Call up 16-60, no pay,  
no emoluments.



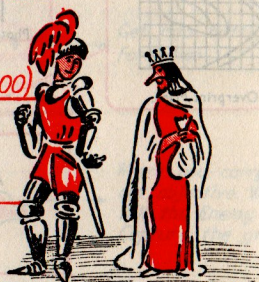
## NORMAN TIMES (1100)

2. **FEUDAL SYSTEM** — rent by  
military services, from  
barons to serfs.  
**EDWARD III** unites Saxons  
and Normans.  
Legends of chivalry —  
**KING ARTHUR**.

2.

## MEDIAEVAL EUROPE (12-1400)

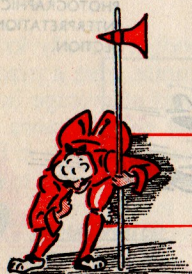
3. **MERCENARIES** hire them-  
selves to an employer.  
Royal Scots fought for  
Louis XIII, Buys for  
the Dutch.



## TUDOR TIMES (1500)

4. **HENRY VII** raises Yeoman  
of the Guard.  
H.A.C. raised: Equipment —  
bows and arrows

4.



## CIVIL WAR (1643)

5. **ROYALISTS:** Spirit — Dash —  
High Morale.  
**ROUNDHEADS:** Religious  
Convictions,  
DISCIPLINE,  
Equally High  
Morale.  
**CROMWELL'S NEW MODEL ARMY**



A useful compromise which combines some of the advantages of both notes and precis can be effected by issuing a skeleton precis which the student must complete during the lesson. The forms used are varied, perhaps the most common is that of leaving a broad margin down the right-hand side of the page in which the student can make his notes. It is particularly useful in teaching technical subjects, when diagrams can be printed and the student must write his own explanations, and, when apparatus cannot be taught practically, diagrams of equipment or machinery can be printed naked, leaving the student to write in the names of the parts and their functions.

Finally, there is the handbook which can be issued to the students as a compendium of learning. This is best produced as a pocket-size pamphlet. There are many examples of this type of publication. Many schools issue their precis bound in a folder, but this is too unwieldy. Two samples of 50 ex-students were questioned eight months after they had left a certain school. The first batch were issued with a set of literary-type and tabulated precis in a folder, and the second with two small handbooks covering the same subjects.

The result was as under :—

	LOST	PARTLY LOST	NOT USED AT ALL	USED OCCA- SION- ALLY	USED FRE- QUENTLY
PRECIS	10%	16%	62%	26%	12%
HAND- BOOKS	4%	—	14%	62%	24%

FIGURE 56

These figures only apply, of course, to this particular case, but they lend colour to the common sense thesis that the soldier's work of reference should be handy or he will not use it, and that it should be a book or he will lose it.

This is not the place to discuss the compilation of handbooks or precis, but the following miscellaneous points concerning their use by instructors and students are worth noting :—



- The pamphlet library, described in Section 8, should be an institution at all instructional establishments.
- Each new instructor should be given a personal set of all the pamphlets he will need and to which he is entitled. This sounds common sense, but it is often harder to extract a pamphlet from a chief instructor than four-by-two from a QM.
- New pamphlets should be circulated quickly until they reach the man who will USE them. If this rule is not enforced, new pamphlets tend to become a false bottom to the in-basket.

## FOR THE STUDENT'S USE

- There is little effect achieved by issuing a pamphlet to a student with an injunction to "go to it." As explained in Part I, Chapter 5, Section 21, the pamphlet must be presented by the instructor as a fascinating volume, rich in desirable information. He and the class must explore it together until the student comes to regard the pamphlet as an intimate friend to whom he can turn for counsel and advice.
- References to pamphlets in students' precis must be designed on the principle of the newspaper hoarding, which arouses curiosity without giving anything away, eg :—

AMAZING DISCLOSURES  
WARNING FROM BENCH

Result : One more paper bought.

Similarly :—

WHAT OBSTACLES CAN A TANK CROSS ?

Sec. : MTP 30, Part III and 59A.

Result : Possibly one more pamphlet read.

The use of the film as a medium has already been discussed. The business of projection, since it is in the care of a man specially trained, is outside the scope of this pamphlet. There remain, however, several aids to good film presentation that can be improvised, and these are worth describing in detail.

- Signals from the instructor to the operator can be given by means of press buttons that control 6-volt bulbs of various colours set in a panel by the operator's box. Three colours usually allow a sufficient combination of signals for normal requirements.
- All controls, such as hall and lectern lights, etc, should be centralized at two points, one in the operator's box and one by the lecturer. There are then always two alternative ways of using the lights.
- Since a film shown by back projection can be shown to a class sitting in a lighted room, the method has several advantages :—

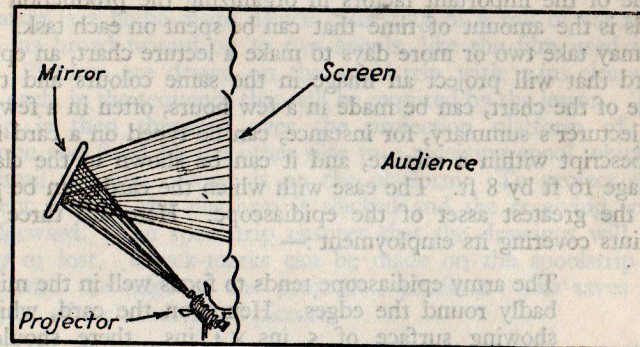


FIGURE 57

- ONE The class can see the instructor.
- TWO The instructor can more easily control the class.
- THREE The class can take notes.
- FOUR All distraction caused by the machinery of projection is avoided.

This method needs several special fittings including a daylight screen and a mirror. It also demands that the end of the hall should be screened off but, once the projection room is complete, it can be used for showing epidiасcope slides and filmstrips as well as films.



- A small preview theatre will make the instructor's task of preparing a film more easy and more pleasant, hence it will more often be well done.

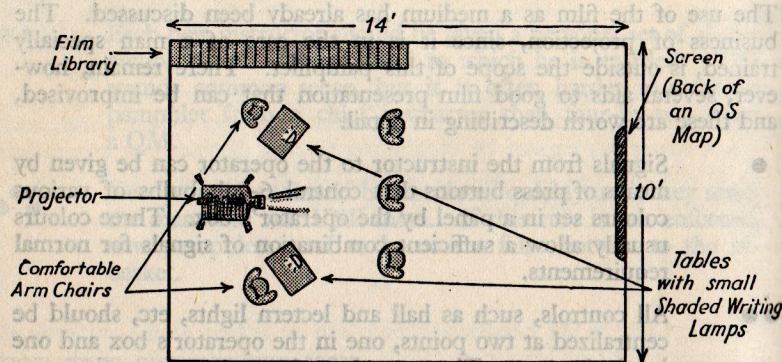


FIGURE 58

17

One of the important factors in organizing the production of visual aids is the amount of time that can be spent on each task. Whereas it may take two or more days to make a lecture chart, an epidiascope card that will project an image in the same colours and twice the size of the chart, can be made in a few hours, often in a few minutes. A lecturer's summary, for instance, can be typed on a card in capital typescript within a minute, and it can be shown to the class as an image 10 ft by 8 ft. The ease with which the cards can be produced is the greatest asset of the epidiascope. Here are three practical points covering its employment:—

- The army epidiascope tends to focus well in the middle, but badly round the edges. Hence on the card, which has a showing surface of 5 ins.  $\times$  4 ins., there should be no important detail within  $\frac{1}{2}$  in. of the edge.
- Slides are as effective and more easily operated than cards, but the range of subjects covered in official sets is small. It is possible to make them by drawing on talc with ordinary coloured inks.
- The great advantage of the epidiascope card over the filmstrip is that it can be projected in colour. This asset should be fully exploited. It can also project an image of an actual object such as a piece of mechanism, etc.
- A spoolstrip is a more convenient form of projection than a set of cards, because it ensures quicker and easier projection.

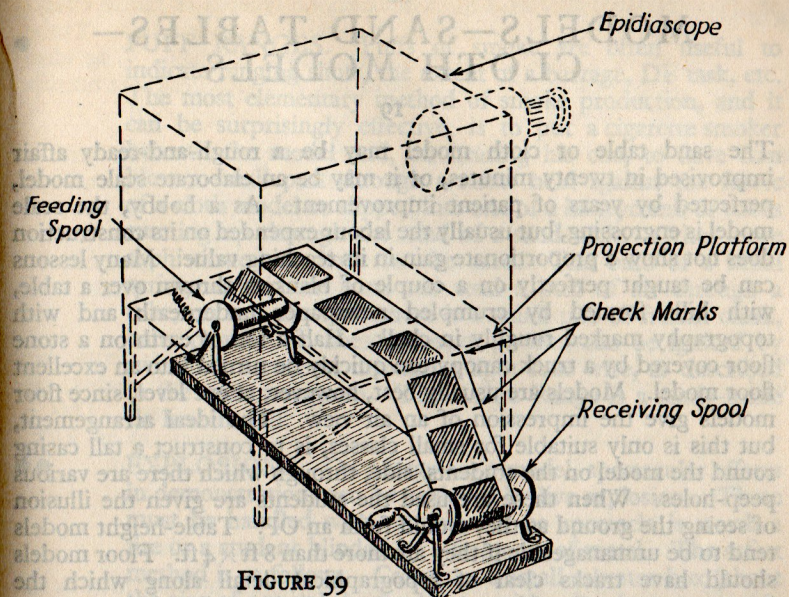


FIGURE 59

A spoolstrip is a home-made device consisting of a roll of cartridge paper 5 ins broad wound on to two spools, like the film used in a camera. Pictures are drawn on the spoolstrip with 2 ins clearance between each, in the sequence that will be required by the lesson. The spoolstrip is then threaded over the projection platform of the epidiascope and fixed on the other side to a receiving spool which is turned until the first picture is on the platform. To project each subsequent picture, the platform is slackened and the receiving spool turned forward. The spoolstrip ensures that the drawings will not get dirty or lost. Check-marks can be made on the spoolstrip to coincide with the edge of the projection platform; this saves the squaring up of each individual picture.

18

The use of the filmstrip as an aid to instruction is limited by the size of the filmstrip library, for there is no satisfactory substitute for the studio-made filmstrip. Both machine and film are compact and can easily be carried from classroom to classroom. The machine is easy to operate and can throw a beam by front projection in a not too brightly lighted room with perfect clarity. An adequate image can be thrown on a blackboard or on a smooth surface of almost any colour, and by this device, details can be drawn over the image in chalk. Of all the methods of setting a test, the filmstrip is perhaps the most convenient. FS841, Weapon Training Quiz, is a good example of a labour-saving yet thoroughly efficient method of testing elementary knowledge of weapon training.



## MODELS—SAND TABLES— CLOTH MODELS

19

The sand table or cloth model may be a rough-and-ready affair improvised in twenty minutes, or it may be an elaborate scale model, perfected by years of patient improvement. As a hobby, the scale model is engrossing, but usually the labour expended on its construction does not show a proportionate gain in its teaching value. Many lessons can be taught perfectly on a couple of blankets thrown over a table, with hills formed by crumpled newspaper underneath and with topography marked roughly in chalk. Half a ton of earth on a stone floor covered by a truck canopy can quickly be turned into an excellent floor model. Models are usually best, however, at eye level, since floor models give the impression of an air view. The ideal arrangement, but this is only suitable for small classes, is to construct a tall casing round the model on the students' side, through which there are various peep-holes. When these are used the students are given the illusion of seeing the ground as they would from an OP. Table-height models tend to be unmanageable if they are more than 8 ft x 4 ft. Floor models should have tracks clear of topographical detail along which the instructor can walk without leaving havoc in his trail.

The following sections contain various practical suggestions for the construction and employment of cloth models, sand tables and range models.

- **SURFACE.** A permanent model can be made from a mixture of clay, chalk and a little cement which will set into a smooth hard surface. When completely dry, this surface will take paint or distemper. Hessian will take distemper, but it will brush off; paint will last longer. The surface of the model can be coloured by using, amongst other things, sawdust dyed in different shades, pine needles (both brown and green), dyed steel wool, salt, cocoa, flour and, perhaps most useful of all, ordinary coloured chalk grated through a cheese grater.

- **INDICATING AREAS.** If it is necessary to indicate on the model areas held by troops, this can be done without obscuring any surface detail by running a thin strand of wire supported on legs approximately 1 in high round the areas to be indicated. 2-in wire nails make convenient legs.

- **INDICATING FIRE.** 6-volt or 4-volt bulbs half buried in sand are a convenient way of indicating enemy fire, the fall of own troops' shot, etc.

- **LIGHTING.** A well-designed lighting set complete with dimmer can give the effect of dawn and dusk. Also, by lighting the model from different angles, moving shadow effects can be achieved. Or a "sun" can be mounted above the model to circle through its orbit. This device is particularly useful for teaching lessons of visibility and camouflage.

- **PUFF RANGES.** Puffs of smoke are often useful to indicate ranging shots, the extent of a barrage, DF task, etc. The most elementary method of smoke production, and it can be surprisingly effective, is to put a cigarette smoker beneath the model and, on hearing his cue, to have him blow a small puff through a straw held against the fabric of a cloth model or slipped into one of a honeycomb of tubes running up through the sand of a sand table. Other more sophisticated methods can be used. The bulb of a small syringe or bicycle horn can send a puff of air through a tube, on top of which there is a small pile of french chalk, baby powder, or flour. Smoke powder can be ignited by switching a current through a light fuze wire, as described in the next paragraph. The Raikes Range is a ready-made de luxe model.

- **EXPLOSIONS.** On a large-scale model, spectacular effects in demonstrations can be achieved by live explosions. These must be handled with caution, for no spectacle is worth a fire or a student blinded by a fragment of metal. The safest method is as follows. Construct a small asbestos box (about the size of a match-box) with a positive terminal at one side and a negative terminal at the other. Join the two by a fuze wire light enough to be blown by the current of the circuit.

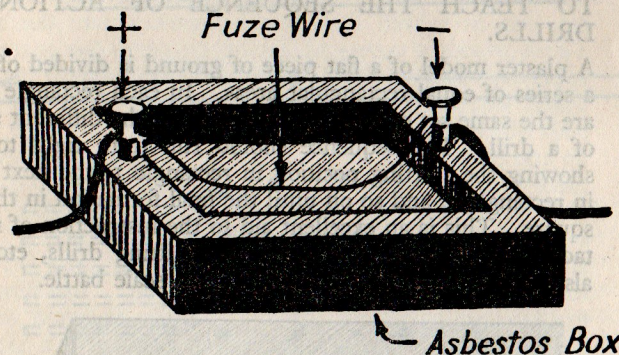


FIGURE 60

Place the powder in the box so that it is heaped over the fuze wire. When the cue for the explosion is given, switch on the current. The fuze wire will blow the powder and cause a lively little explosion. If the explosion should be a "blind," it is important to remember that the current must be switched off before the box is touched. Fuze, instantaneous, detonating (FID) can be used in the same way, but ignition is not so certain. The use of detonators, electric or otherwise, for this purpose is definitely dangerous.



**NOISE EFFECTS.** Gramophone records of battle effects add greatly to the realism of a model demonstration. These are obtainable through ordinary trade channels. The ideal noises, of course, are those of live weapons fired just outside the classroom.

**MOVING TARGETS.** A model railway engine with a mock-up tank frame built over it can present a realistic moving target for practice in giving fire orders. It is better if the railway is electrified, for then the speed of the engine can be controlled; the speed of a clockwork engine cannot. The track layout can be designed to show the model tank from all angles and elevations.

**HIT OR MISS INDICATOR.** When students are exercised on a model range using harmonized sights, tin plates can be placed in harmony with the target. This is especially effective when the student is aiming at an AFV, for he will hear at once whether he has hit or missed.

21

The following three examples of model instruction are included as an illustration of the vast scope of this medium if a subject is treated with imagination and the model constructed with ingenuity.

#### TO TEACH THE SEQUENCE OF ACTION IN DRILLS.

A plaster model of a flat piece of ground is divided off into a series of equal rectangular areas. In each rectangle there are the same set of symbols representing the different stages of a drill. The sequence should run from right to left, showing the starting position in rectangle 1, the next stage in rectangle 2, and so on until the final formation in the last square. This is an excellent aid to the instruction of minor tactical drills, minelaying and mine lifting drills, etc, and also of the progressive stages of a full scale battle.

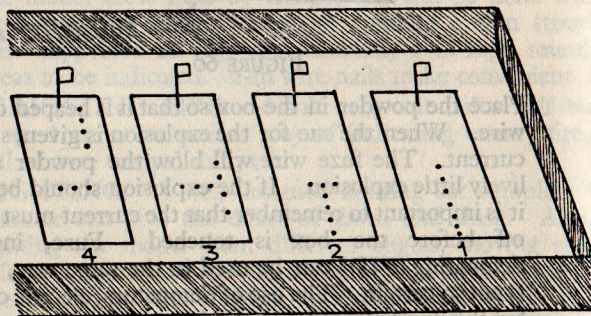


FIGURE 61

#### TO TEACH MINE LAYING AND MINE CLEARING DRILLS.

A green cloth, 14 ft x 8 ft is used to represent the area of the minefield. Men are made from wire, bound with tape and stuck into wooden bases with their function written on them, ie, "NCO IC," "Laying Party No 5," etc. Alternatively they can be given a piece of wire with a loop to represent a mine detector, a straight piece of wire to represent a mine prod, etc. Beer bottle tops do for mines, a circular frame of wire with two crossing tapes for mine markers. All the remaining paraphernalia of the minefield, datum point, gap marking signs, landmarks, etc, are made in a similar way. Cables for pulling mines are pieces of string with hooks attached. Coloured tapes to indicate the marking of the area and the progress of laying or clearing are coiled beneath the cloth with only the end appearing through a hole. These can be drawn out as the tapes are laid. As one instructor describes each stage of the drill, another moves the objects on the model, giving visual confirmation of each movement as it is announced.

#### MINEFIELD CLEARING MODEL

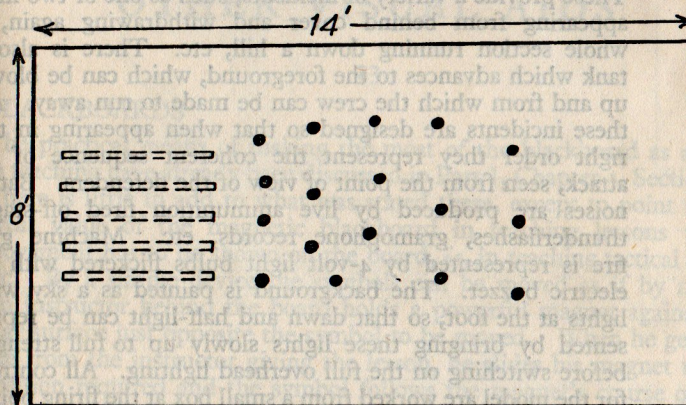


FIGURE 62A



## BASIC BREACHING PARTY

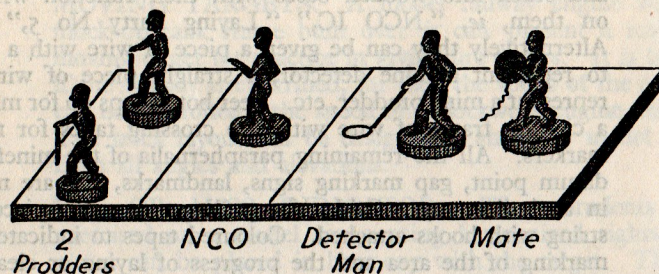


Figure 62B

### TO PRACTISE NCOs AND MEN IN GIVING AND EXECUTING FIRE ORDERS.

A battlefield is represented by a large earth model at the target end of a miniature range. The battlefield is complete with trees, hedgerows and houses made in silhouette from plywood. If these last are used as targets, they can easily be replaced. Models of sections in file and extended order, etc, can be moved for limited distances over the model. These provide a variety of incidents, such as one or two men appearing from behind cover and withdrawing again, a whole section running down a hill, etc. There is also a tank which advances to the foreground, which can be blown up and from which the crew can be made to run away. All these incidents are designed so that when appearing in the right order they represent the coherent sequence of an attack, seen from the point of view of the defenders. Battle noises are produced by live ammunition fired off-stage, thunderflashes, gramophone records, etc. Machine gun fire is represented by 4-volt light bulbs flickered with an electric buzzer. The background is painted as a sky with lights at the foot, so that dawn and half-light can be represented by bringing these lights slowly up to full strength before switching on the full overhead lighting. All controls for the model are worked from a small box at the firing point.

The class consists of a full section and a 2-in mortar detachment. They are told that they have carried out a successful night attack and are now standing to in their newly-won position, waiting for the dawn. The battlefield is in complete darkness. Enemy transport can be heard in the distance. Slowly dawn begins to break, and enemy troops can be seen on the move in the far distance. A full-

scale attack develops, and as the enemy approach the class see situations suitable for every type of application of fire. The section commander gives his fire orders. The enemy are engaged with pellet ammunition and the attack staggers under the withering fire. The surviving elements of the enemy are decimated as they make their final assault right into the foreground.

Throughout the battle the instructor gives a running commentary to describe the detailed sights and sounds of the real battlefield. The mortarman does not fire, but he is given fire orders, and sees his bombs drop. The exercise ends with a discussion and, if necessary, with a second run-through of the battle.

22

Whenever possible, models are best made by the user. He alone knows his exact requirements and the local conditions under which his model will be used. If, however, a standard ready-made article will serve equally well, there are several firms who can supply a wide range of models.

The Camouflage Development and Training Centre does not supply ready-made models, but advises on problems of landscape modelling, and all types of landscape model can be seen at the Centre.

## OTHER VISUAL AIDS

23

### BLACKBOARDS

The practical means of making the most of the blackboard as an aid to teaching have already been discussed in Part 1, Chapter 3, Section 21. There is little to add to what was stated there, except to point to the great value of the magnetic blackboard in teaching lessons where movement has to be shown on the board, *ie*, in teaching tactical drills, etc. By a simple device the symbols can be moved as if by magic. An instructor behind the board holds a powerful magnet against the rear surface just opposite the symbol to be moved. When he gets his cue from the instructor giving the lesson, he slides his magnet to the position required and the symbol follows the magnet's course on the opposite side of the board.

24

### CHARTS

Charts which are used during the course of instruction should not be confused with wall charts; the two have entirely different functions and demand a different style of treatment. Wall charts may teach a



lesson in themselves, complete with detailed diagrams and explanation ; charts used during instruction should be a clear illustration of one single point.

Wall charts may be designed in any way so long as they succeed in persuading the student with a few idle moments to read them and to remember the lesson they set out to teach. Both art-work and letterpress can well follow the style of the best commercial advertisement.

Charts used during instruction, however, must conform to certain definite rules if they are to do their job. They must not be too big or they will be unhandy for the instructor, and they must not be too small or they will be invisible to the class. Figure 63A is an example of a good standard size for a chart.

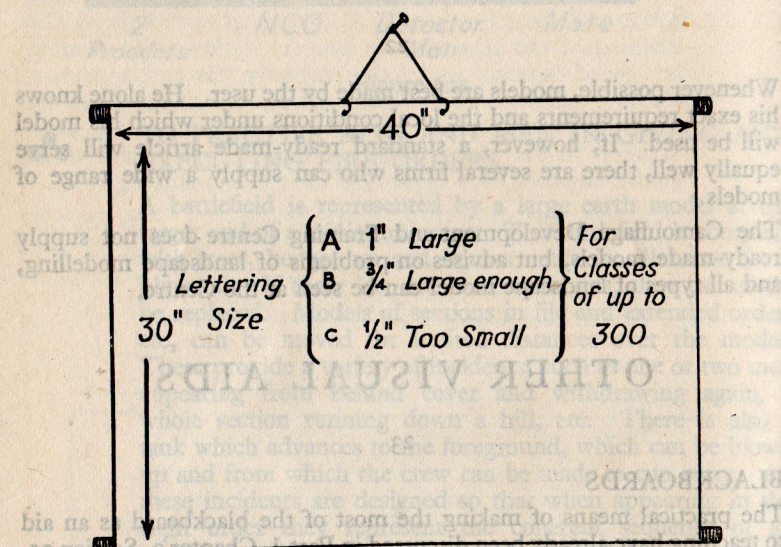


FIGURE 63A

The chart should be nailed on to a thin lath at the top and bottom so that it can be rolled up and tied with a slip-knot ready to be dropped when required.

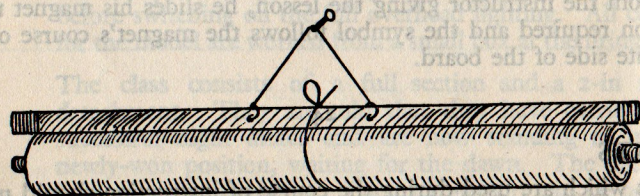


FIGURE 63B

Charts and epidiastope cards can be classified into three main types : pictorial, diagrammatic and lettered. The pictorial chart is used to give a general impression of some object which is not available for the class to see with their own eyes. Here is an example of a good pictorial chart of a Lifebuoy flame thrower.

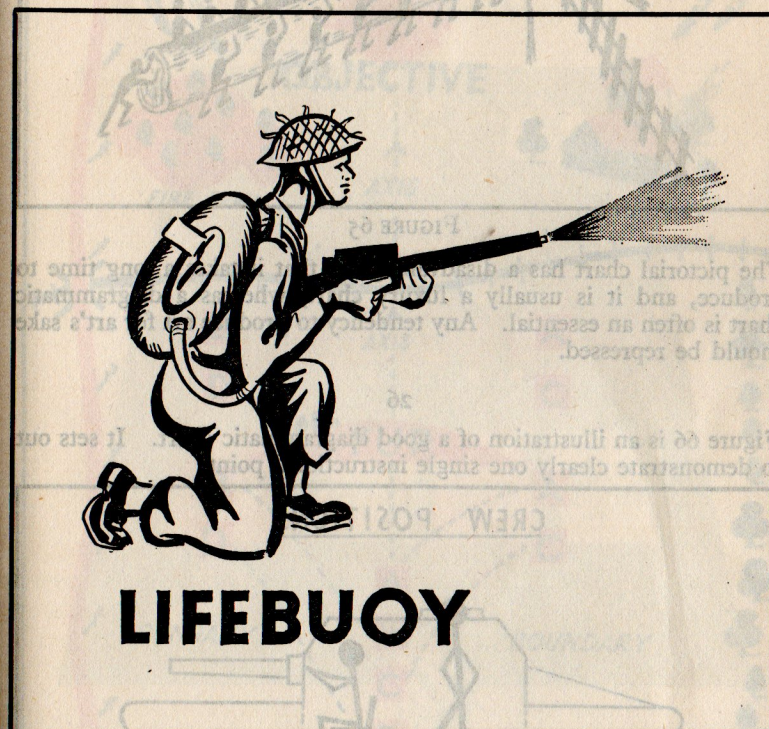


FIGURE 64



Again, in teaching some principle or axiom, the pictorial chart can be used to give the student a symbolic picture which, at the same time, crystallizes the meaning of the point being taught and impresses it vividly upon his visual memory. Figure 65 was used to illustrate the principle of concentration of force in attack.

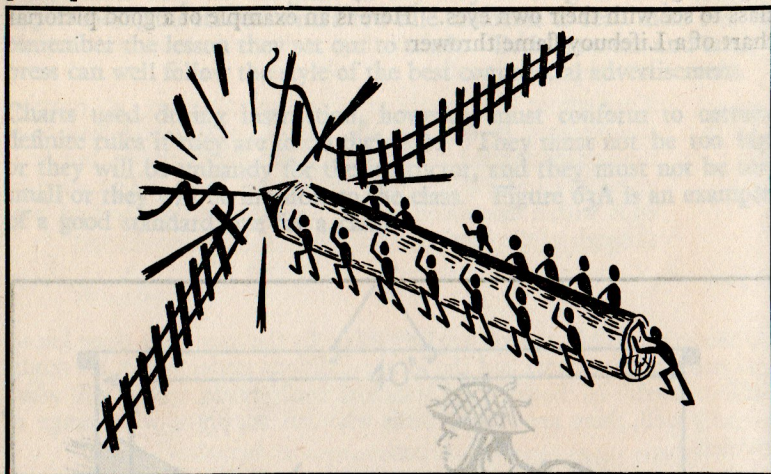


FIGURE 65

The pictorial chart has a disadvantage in that it takes a long time to produce, and it is usually a luxury chart, whereas a diagrammatic chart is often an essential. Any tendency to produce art for art's sake should be repressed.

26

Figure 66 is an illustration of a good diagrammatic chart. It sets out to demonstrate clearly one single instructional point.

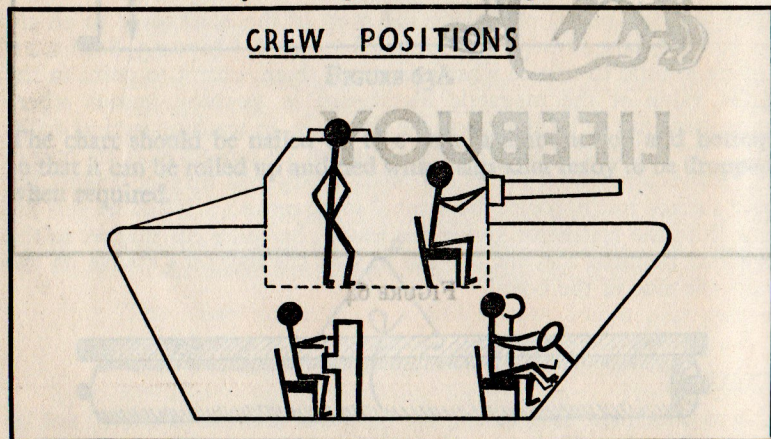


FIGURE 66

Figure 67, designed to teach the terminology used in an attack, is also a good chart, but only if it is used with discretion. If the whole chart were to be revealed at once, the class would have no point of focus and the retrospective impression would be one of confusion. If, however, the instructor contrives to draw down the chart like a blind, revealing one instructional point at a time, not only will each one get full individual attention, but the sequence of attack will be pointed by the unrolling of the battlefield.

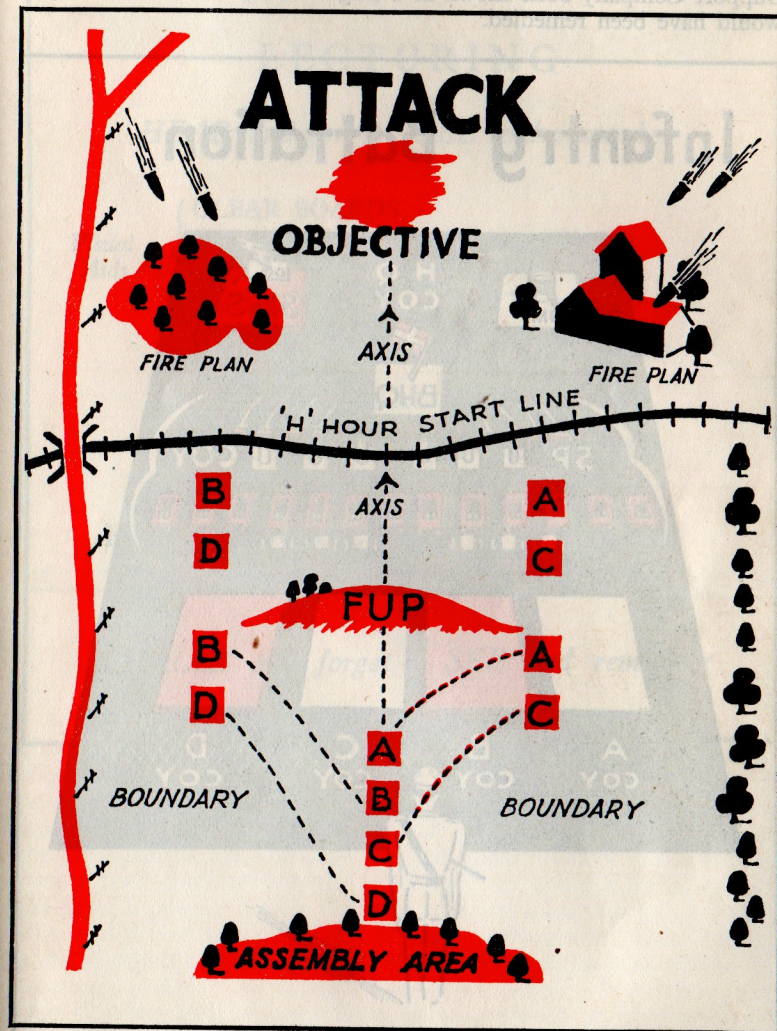


FIGURE 67



Figure 68 is a semi-pictorial treatment of a subject which is usually presented as a family tree. It is designed to impress the visual memory, and certainly it is far more memorable than the family tree which can only leave a blurred impression of lines and branches without one being particularly distinguishable from any other. This example does not, however, achieve complete success, first because it fails to group the sub-units distinctly and, secondly because it tries to cram into the picture more detail than the space will conveniently hold. Had the Support Company been shown as a single block, both of these faults would have been remedied.

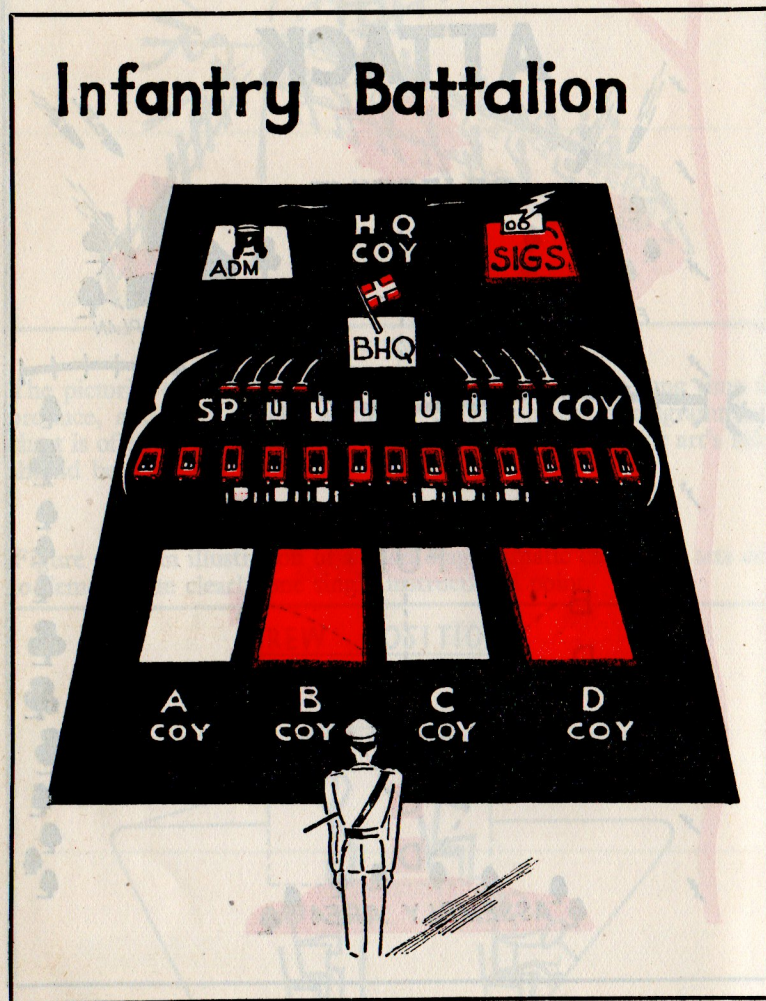


FIGURE 68

Lettered charts should not usually have more than from twelve to twenty words. Figure 69 breaks this rule, and it is doubtful if a class which were shown this chart would be able to visualize more than half of it after a day or two had elapsed.

## LECTURING

*HEAR and forget—SEE and remember*

Visual Aids { CLEAR BOARDS  
CLEAR MINDS  
SIZE, SCOPE and CLARITY  
HIGH INTEREST=GOOD DIVIDEND  
PREPARATION AT A PREMIUM  
SEQUENCE—STAGES—SUMMARIES

KNOW YOURSELF —

BE YOURSELF

*HEAR and forget — SEE and remember*

FIGURE 69



Figure 70 is a good, straightforward lettered chart.

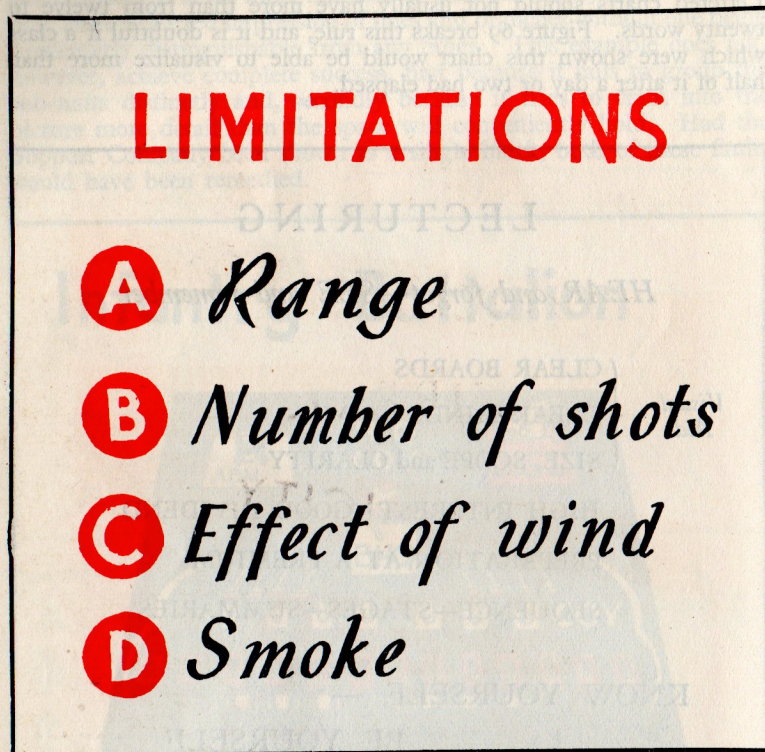


FIGURE 70

Figure 71 is a stylised lettered chart. A good artist can make most effective use of this treatment.

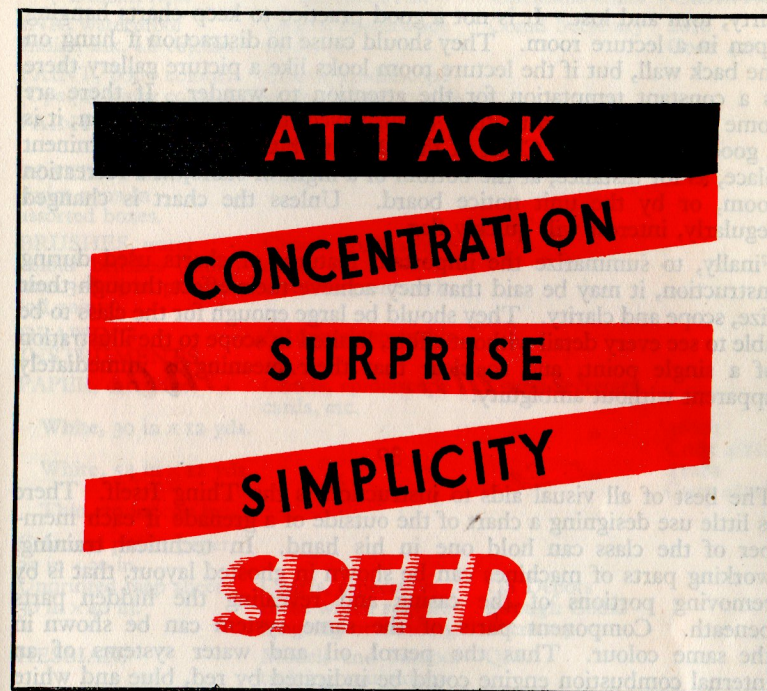


FIGURE 71

The examples printed in the last few pages have lost much of their effect by their reproduction in only one colour. It has only been possible to criticize their design, but it must be remembered that colour is another most important factor. Red, white and black provide the three greatest contrasts, and any one of these colours used sparingly over a chart dominated by the other two will give great emphasis to the items it points. Red is the most common colour for this purpose. Blue and yellow are the other two primary colours and come next in order of priority. It is, however, the artist's job rather than that of the instructor to decide the scheme of tone and colours. It will be a great help if, when he is given a rough design to work on, the instructor can point out to him the items that should be emphasized and those that are of little importance. Charts drawn in light colours on a black background are an effective way of illustrating night movement or tactics.



Charts are best preserved as controlled stores issuable only for the duration of a period. If this rule is enforced, fewer charts will get dirty, torn and lost. It is not a good practice to keep charts hanging open in a lecture room. They should cause no distraction if hung on the back wall, but if the lecture room looks like a picture gallery there is a constant temptation for the attention to wander. If there are some charts which can usefully be displayed for study or revision, it is a good plan to run a Chart of the Day exhibition in some prominent place, as for instance, at the bottom of a flight of stairs, in a recreation room, or by the unit notice board. Unless the chart is changed regularly, interest will quickly flag.

Finally, to summarize the important features of charts used during instruction, it may be said that they achieve their effect through their size, scope and clarity. They should be large enough for the class to be able to see every detail without effort, limited in scope to the illustration of a single point, and so clear that their meaning is immediately apparent without ambiguity.

## 30

The best of all visual aids to instruction is the Thing Itself. There is little use designing a chart of the outside of a grenade if each member of the class can hold one in his hand. In technical training, working parts of machines can be shown in ghosted layout, that is by removing portions of the casing and revealing the hidden parts beneath. Component parts of the same system can be shown in the same colour. Thus the petrol, oil and water systems of an internal combustion engine could be indicated by red, blue and white paint on all the pipes and working parts concerned in each system. This is an excellent method and one that can scarcely be carried too far. If the thing itself cannot be cut open, a mock-up model, if possible of actual size, can be used instead. Small-scale working models are also extremely valuable visual aids, but in order that instructional time should not be wasted, and that at the same time every man should have a chance of handling the model, the class must be very small or the number of models large.

## WORKSHOP EQUIPMENT

## 31

The essential equipment of training is supplied by the Army; some desirable but not so essential items can be bought from firms who specialize in military training equipment, but in every school and unit the instructional staff will have to provide many intricate aids to instruction that only the man on the spot can devise. Here is a list of some of the more useful items for the chief instructor's workshop.

Sources of supply have been inserted for certain items; others may have to be obtained by purchase from firms who specialize in the supply of artists' materials.

DESCRIPTION	SUITABLE FOR	OBTAINED FROM	ORDER No
INK, waterproof Indian ink, all colours.	Charts, epidiascope cards, etc.	Comd Secretary	2810 Code 42/21
PAINT, body colours. (Opaque water colours)	Charts, epidiascope cards, indoor models, etc.		
PAINT, varnish paint.	Outdoor models and outdoor paintwork.		
POSTER PENS, script pens in assorted boxes.	Charts.		
BRUSHES, water colour brushes (sable) sizes 3-8. $\frac{1}{4}$ in. painters (oil paints).	Charts, epidiascope cards, etc. Outdoor paintwork.		
DRAWING INSTRUMENTS.	All draughtsmanship.		
PAPER, cartridge.	Charts, epidiascope cards, etc.	Comd Secretary.	
White, 30 in $\times$ 12 yds.		" "	36601 Code 4/21
White, 54 in $\times$ 12 yds.		" "	41281 Code 4/22
Thin, 20 in $\times$ 30 in.			
Coloured poster paper, 20 in $\times$ 30 in.			
Unprinted map sheets, 30 in $\times$ 40 in.	Charts, especially those which require hinging or bending.	OS Depots through Comd Secretary.	
HESSIAN.	Models and outdoor training equipment.	QM.	
WOOD, scrap.	Laths for charts. Models, training equipment, etc.	Unit salvage.	
TOOLS.	Model making, general purposes.	Unit equipment. Bought locally.	

## SOME TRAINING AIDS AND DEVICES

## 32

### TO PRESERVE DIAGRAMS DRAWN IN CHALK

- **VARNISHED DIAGRAMS.** Draw the diagram with especial care, blow all the chalk dust off the board, or blackboard, and apply two coats of varnish. The diagram will then last for any length of time without becoming smudged. Since the varnish is difficult to remove without planing, it is only worth while varnishing diagrams which are to become permanent institutions.



## TO IMPROVISE A MAGNETIC BLACKBOARD

- • **BLANKET BOARDS.** A blanket hung over an upright table top and drawn tight will make a serviceable blackboard. Numbers, symbols, etc, can be cut out of cardboard and backed with emery paper. These will stick to the blanket and can be moved about at will over the chalked framework as easily as the symbols on a magnetic blackboard.

## TO ENSURE THAT THE ATTENTION OF THE CLASS IS FOCUSED ON THE PART OF THE DIAGRAM THAT IS BEING EXPLAINED

- • **BLINKERED CHARTS.** Certain charts, such as the 'family-tree' establishment chart, tend to confuse the student by their large number of headings. Their attention is likely to wander to parts of the chart other than those with which the instructor is dealing. To overcome these disadvantages a 'blinker' chart can be made.

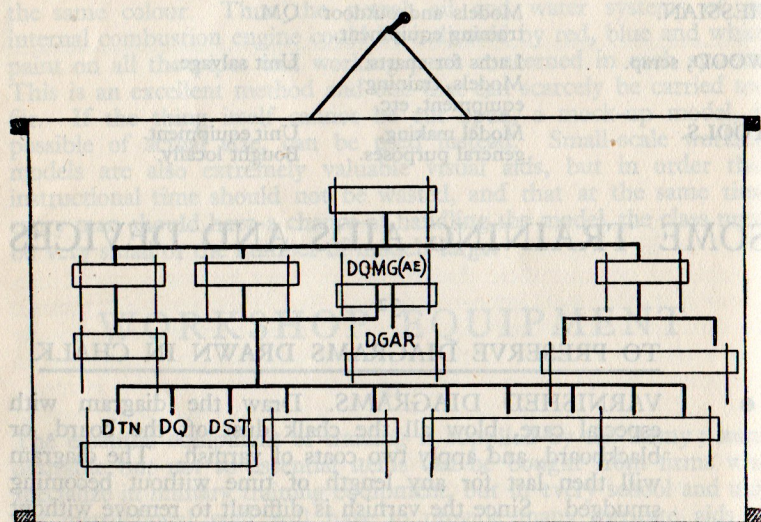


FIGURE 72

Each blinker is a flap of cardboard. The bottom edge is hinged to the chart, so that when it is turned up it exactly covers the wording. Each blinker is held in place by a strand of elastic over each end.

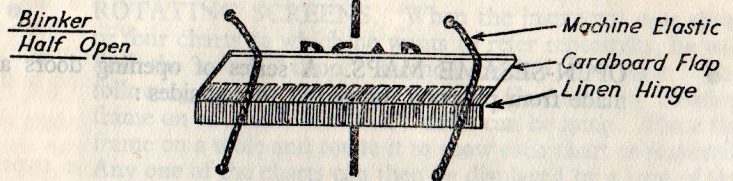


FIGURE 73

For extra strength it is advisable to mount the whole chart on a linen backing. By displaying only one item at a time, the instructor can ensure that all attention is focused on it.

## TO REPRODUCE EPIDIASCOPE CARDS AS CHARTS

- • **PROJECTION ENLARGEMENT.** One of the main considerations in designing visual aids is the amount of time and labour taken up in their production. While a chart, because it can be shown without apparatus and is easily portable, is usually a more useful aid than an epidiascope card, the former may take a whole day to produce, the latter only twenty minutes or half an hour. Therefore, since the visual aid seldom turns out right in its first shape, but only reaches perfection after it has been amended by the suggestions of several users, it is often wise to design it as an epidiascope card first, and when it has reached its final form to reproduce it as a chart. This can be done easily and quickly by projecting the image of the card on to a piece of chart paper and by tracing the design line by line. As a method of making map enlargements this is a particularly useful device.



## TO TEACH THE LAYOUT OF FORMATIONS AND UNITS IN THE FIELD

- OPEN-SESAME MAPS. A series of opening doors are made from plywood, hinged at the outsides :

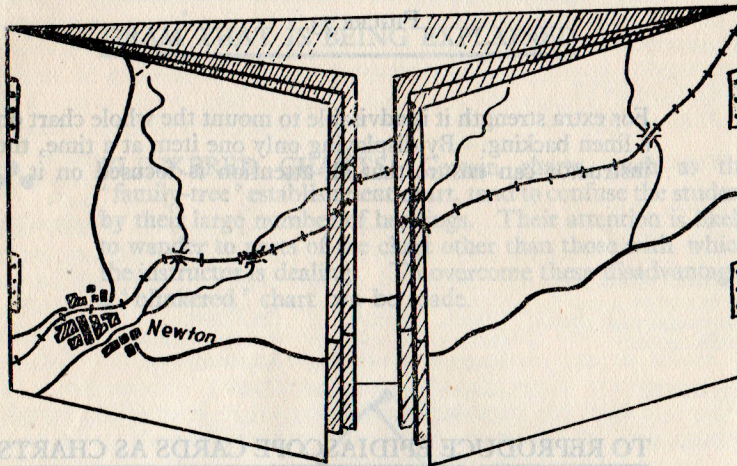


FIGURE 74

Each map formed by a pair of closed doors is of the same area and to the same scale. The top map gives the layout of the formation in its bare essentials, the second in slightly greater detail, and so on until the backboard is revealed, showing the position of every unit and sub-unit. This device saves the loss of time and the distraction caused by chalking up successive stages on a blackboard or of building the complete picture by means of symbols. It is best suited for small classes or private study.

## TO ALLOW EASY REFERENCE TO ANY ONE OF

### SEVERAL CHARTS

- ROTATING SCREENS. When the instructor uses three or four charts to which he wants to refer repeatedly, he will find the usual "drop" method clumsy and slow. The following device is often useful. Construct a rotating frame on each side of which a chart can be hung. Place the frame on a table and rotate it to show each chart as required. Any one of the charts can then be displayed by a turn of the frame.

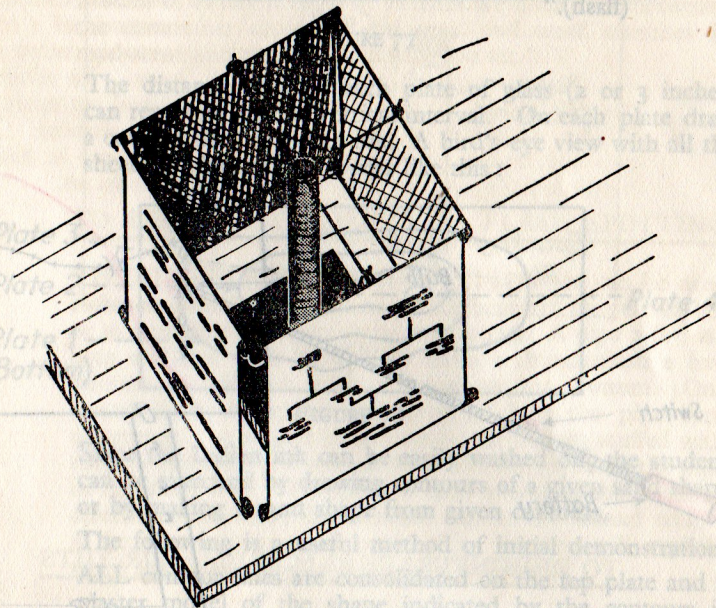


FIGURE 75

An old piano stool forms a good framework for this device. One of the four charts can have a drop-cloth so that distraction can be avoided by turning a blank surface to the class when the charts are not being used.



## TO INDICATE CLEARLY DETAILS ON A BLACK-BOARD OR CHART

●●● **WROTHAM WAND.** The Wrotham wand is a hollow pointer with a 4-volt battery as the handle and a bulb at the point. A press switch can be placed at the point of balance. This luxury is useful for drawing attention to the exact point to be indicated, *ie*,

NOT: "The boundary runs from HERE (vague sweep) to HERE (flourish)."

BUT: "The boundary runs from HERE (flash) to HERE (flash)."

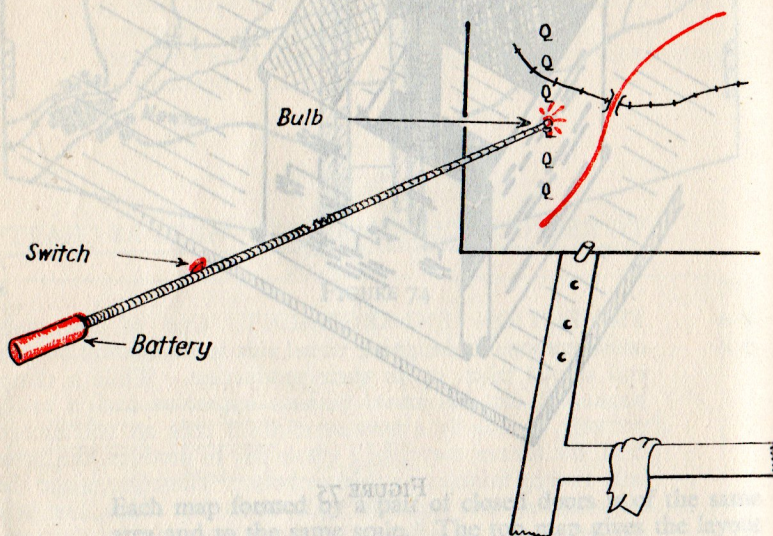


FIGURE 76

## TO TEACH CONTOURS

●● **GLASS MODEL.** Construct an oblong wooden box with one side and the top missing. Make grooves along the two ends of the box into which plates of glass can be slid, one above the other.

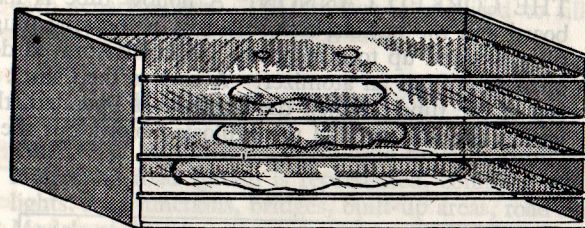


FIGURE 77

The distance between each plate of glass (2 or 3 inches) can represent 50 feet vertical interval. On each plate draw a contour line in Indian ink. A bird's-eye view with all the sheets in place might appear like this:

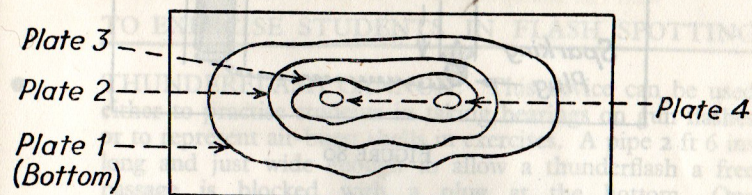


FIGURE 78

Since the Indian ink can be easily washed off, the student can be exercised by drawing contours of a given sand shape or by making a sand shape from given contours.

The following is a useful method of initial demonstration. ALL contour lines are consolidated on the top plate and a plaster model of the shape indicated by the contours is placed underneath on the bottom of the box.

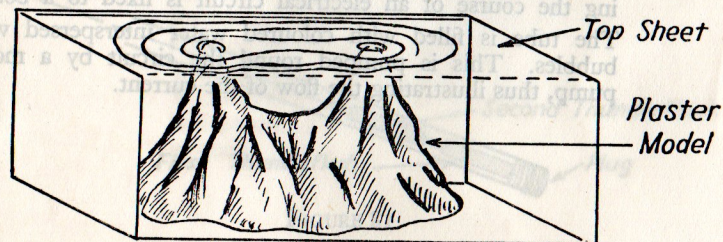


FIGURE 79



## TO TEACH THE PRINCIPLES OF CARBURATION AND IGNITION

● **THE CORKED CANNON.** A hollow tube is fixed to a board and the bottom end sealed by a sparking plug. The plug is wired up to a magneto. Petrol is sprayed down the open tube from an atomizer. A cork is then stuck into the top of the tube. When the magneto is operated, the spark ignites the mixture and the explosion blows out the cork.

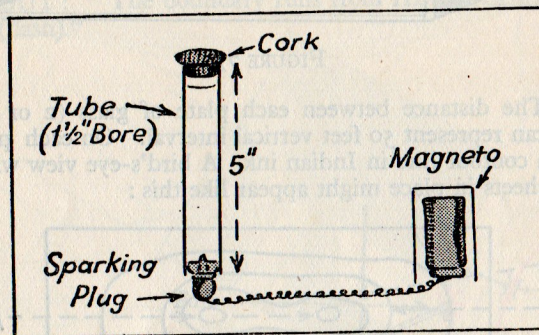


FIGURE 80

## TO DEMONSTRATE ELECTRICAL CIRCUITS

●● **THE BUBBLE PUMP DIAGRAM.** A glass tube representing the course of an electrical circuit is fixed to a board. The tube is filled with coloured water interspersed with bubbles. This is pumped round the circuit by a motor pump, thus illustrating the flow of the current.

## TO TEACH THE NAMES AND USE OF TOOLS IN A TOOL KIT

●●● **SHOWCASE QUIZ.** All the tools in a tool kit are fixed to a table and marked. When, during training, maintenance tasks crop up, the instructor takes the class to the table and conducts a quiz, asking which tools would be required for each separate task. The student is required to fill in the number AND NAME of each tool.

## TO TEACH THE HIGHWAY CODE

●● **TRAFFIC MODELS.** On a sand table or cloth model an interesting road system is represented, complete with traffic lights, road junctions, bridges, built-up areas, road signs, etc. Models of different types of vehicles are used to demonstrate the commoner causes of accidents, and small exercises in road-sense and conduct in driving are set.

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## TO EXERCISE STUDENTS IN FLASH SPOTTING

● **THUNDERFLASH CANNON.** This device can be used either to practise students in taking bearings on gun flashes or to represent air-burst shells in exercises. A pipe 2 ft 6 ins long and just wide enough to allow a thunderflash a free passage is blocked with a plug at the bottom. One thunderflash is lighted and dropped into the pipe fuze uppermost. A second thunderflash, the bottom stuffed with earth, is lighted a few seconds later and dropped into the pipe in the same way. The pipe is then aimed in the required direction; the first thunderflash expels the second which, if the pipe is held at an angle of 45 degrees, will explode while still in the air at a distance of 30-40 yds.

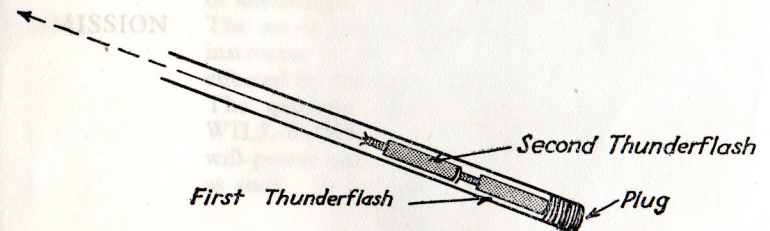


FIGURE 81



## TO SPEAK TO A LARGE AUDIENCE WITHOUT HAVING TO ADDRESS A MICROPHONE

●● **LAPEL OR THROAT MIKE.** A small light microphone can be affixed to the coat lapel and used without causing any inconvenience to the speaker. Alternatively, a throat-microphone or laringaphone might be used. The amplifier can be controlled by an operator seated at the back of the hall who can increase the volume as the speaker's voice grows tired.

## TO TEACH THE OPERATION OF WIRELESS SETS

●● **THE SPEAKING DUMMY.** A large-scale model of the control panel of the set is made. All the switches, controls, etc, are suitably geared and wired to the controls of a real set. With the assistance of an amplifier, manipulation of the dummy controls produces realistic noises. To achieve the best results, each student should have a real set in front of him while the instructor demonstrates the dummy. In this way he can be brought to associate the noises he hears with the manipulation of the controls on his own set.

## DEFINITIONS

The words listed here are frequently used throughout the pamphlet in special sense. If you are not quite sure what they mean, read through these definitions.

### ASSIMILATION

The understanding and remembering of knowledge. Assimilating a lesson can be compared to digesting a meal. The food, or the subject matter of the lesson, does not do any good until it has been assimilated and has become part of the person.

### KNOWLEDGE

The understanding and remembering of facts. Knowledge concerns storage in the mind only. Applied knowledge is a technique.

### MOTIVATION

A man is motivated when he WANTS to do something. A motive is not quite the same as an incentive, for whereas a man is inspired and made enthusiastic by an incentive, his motive for wanting to do something may be a fear of punishment. Motivation covers ALL the reasons which underlie the way in which a person acts.

### RECEPTION

The actual process of receiving new learning. It may be received through the ear by hearing, through the eye by watching or through the body by imitating, or through any combination of the three. A man will only receive learning if he WANTS to do so.

The quality of self-development, or the full expression of a man's personality. A well-developed personality will have :—

INITIATIVE  
IMAGINATION  
ADAPTABILITY  
ALERTNESS  
CHEERFULNESS  
MATURITY.

### SKILL

A physical act, usually almost instinctive. When a movement of the body is not instinctive but needs constant thought, it is a technique.

### TECHNIQUE

A way of thinking or behaving. An application of knowledge, or skill, or both.

### TRANSMISSION

The act of passing knowledge or skill from the instructor to the class. Transmission may be effected by talking or showing.

The qualities which centre around a man's WILL-POWER, but this quality does not mean will-power alone, and should not be thought of as such. It includes :—

COURAGE  
TOUGHNESS  
PERSEVERANCE  
DISCIPLINE  
SENSE OF DUTY  
RESPONSIBILITY.









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